SEPTEMBER 13, 1993 SECTION 2 OF 2

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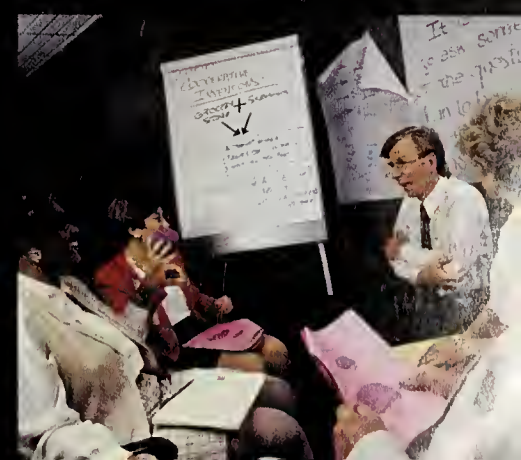

Even dead, they're trouble. ◈ Dr. Jack Horner will tell you that. He's the man whose research brought the monstrous dinosaurs back to life in the hit movie *Jurassic Park*. And more than once, he recalls, he nearly lost the fight. ◈ "How did dinosaurs run?" the Montana paleontologist asks."How fast did they grow? How long did they live? We would have been short of answers without some very sophisticated statistical

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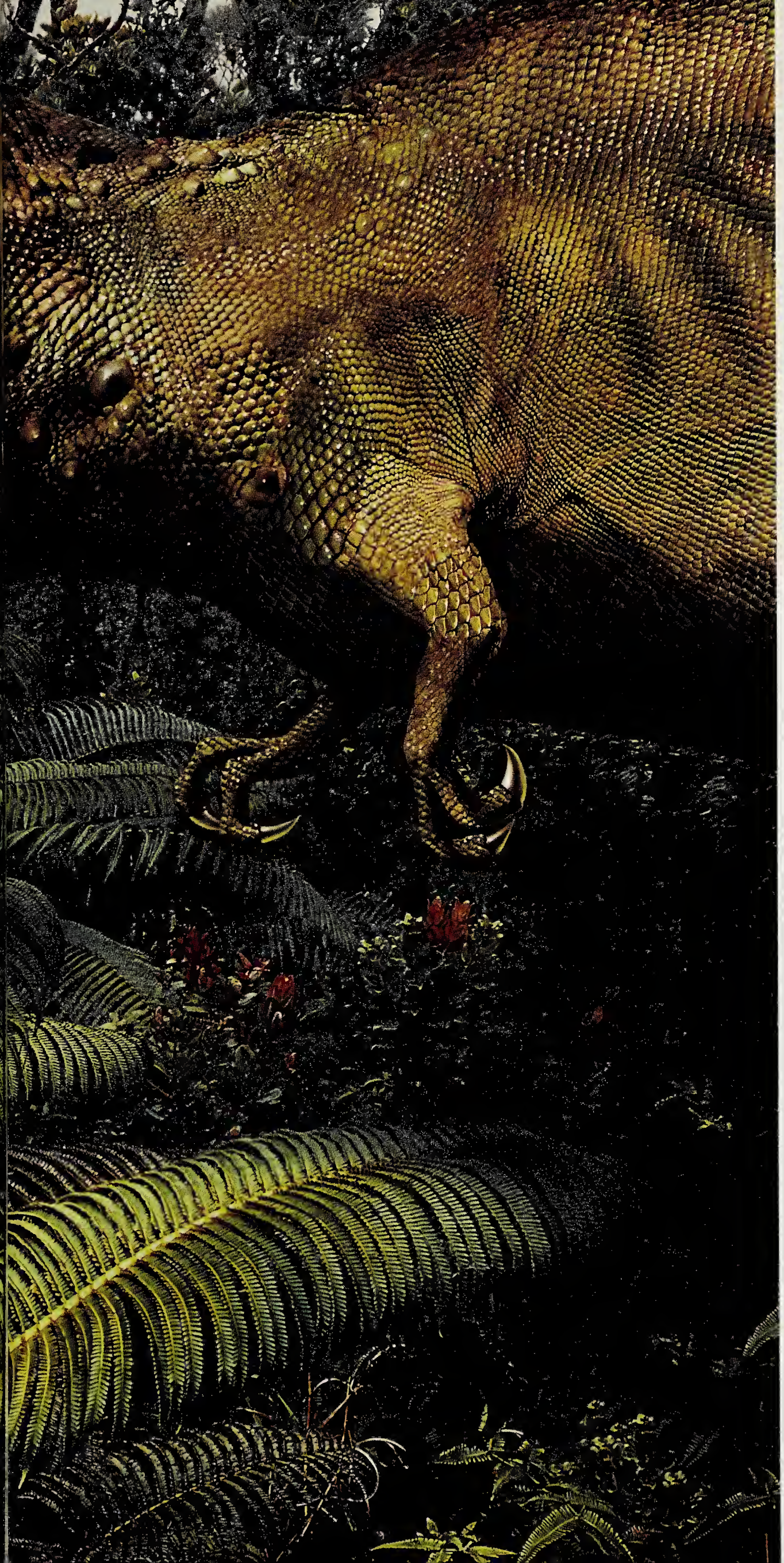
analyses and three-dimensional imaging." ◈ All of which pit the fearsome beasts against Sun™ workstations. ◈ Using images, Dr. Horner was able to envision the eyes, ears, nose, and brain structure of the long-extinct lizards. He



was also able to look at them three-dimensionally, right on the screen, from every conceivable angle, testing theory against fact. ◈ Using Sun, Dr. Horner was soon able to pin dinosaurs down, quantifying how well they could hear, even how they sounded. ◈ And what might a dinosaur say, should one meet you? ◈ Mostly, a kind of growling. ◈ "They weren't very intelligent," Horner says. ◈ But they were pretty hungry. ◈ Sun computers. Just the thing to handle a towering lizard, or whatever monstrous task you're facing. ◈ More than one million people are using Sun systems, powered by the SPARC® chip and the Solaris® operating environment, to gain a competitive advantage. Jack Horner is just one. To learn how you can benefit, call 1-800-426-5321, ext. 605.

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COMPUTERWORLD PREMIER 100

EDITOR
Joanne Kelleher

RESEARCH MANAGER
Michael Sullivan-Trainor

MANAGING EDITOR
Joyce Chutchian-Ferranti

DESIGN DIRECTOR
Nancy Kowal

ASSISTANT MANAGING EDITOR
Anne McCrory

WRITERS
David Baum
Julia King
Alice LaPlante
Alan Radding

RESEARCHER
Erin Callaway

CHIEF COPY EDITOR
Catherine McCrorey

COPY EDITORS
Kimberlee A. Smith
Steven J. Condon
Christina Aicardi McGuire
Jill Zolot
Ellen Fanning

DESIGNERS
Janell Genovese
Stephanie Faucher

PRODUCTION MANAGER
Beverly Wolff

ADVERTISING COORDINATOR
Paula Wright

EDITOR IN CHIEF
Bill Laberis

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Cover design: Tom Monahan. Cover photography (clockwise) by: Brian Smale, Michael Abramson, Alain Keler/Matrix, Jack Van Antwerp.

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PHOTOGRAPHY BY SIMON GRIFFITHS (LEFT) AND REID HORN (RIGHT)

The Computerworld Premier 100 team: *(from left): Anne McCrory, Joanne Kelleher, Nancy Kowal, Erin Callaway, Joyce Chutchian-Ferranti and Michael Sullivan-Trainor.*

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PHOTOGRAPHY BY STELLA JOHNSON (TOP), JAMES SCHNEPF (MIDDLE) AND TOM ZIMBEROFF (BOTTOM)

Drawing outside THE LINES

THE BEST RULE THESE DAYS is that there aren't any rules, and if there is one attribute shared by this year's *Premier 100* organizations, it is their willingness to jettison old conventions and work in that dangerous white space where there are no preconceptions about how things should be done.

The spirit is infectious. We've also made some rather significant alterations this year, both in our selection process and in the information we present about these outstanding information systems organizations.

We've expanded our evaluation to take into account many factors that bear on excellence of technology management, including but not limited to assessments from top executives of these companies about the value that technology is adding to the business. We've also tried to give readers a closer look at the kinds of things these companies are doing with technology and the philosophies behind their actions.

When companies or people are chosen for this kind of honor, the question naturally arises: "What makes them so good?" We hope that by the time you've finished reading you'll have your answer *and* a scratch pad full of notes about tactics you might want to try.

As Michael Sullivan-Trainor, research manager and initiator of the *Premier 100*, makes clear in his

AEROSPACE	CONSUMER PRODUCTS AND SERVICES	FINANCIAL SERVICES	INDUSTRIAL AND AUTOMOTIVE PRODUCTS	MANUFACTURING
1 The Boeing Co.	**1** Dibrell Brothers, Inc.	**1** Banc One Corp.	**1** Cummins Engine Co.	**1** Rubbermaid, Inc.
2 Martin Marietta Corp.	**2** Hon Industries, Inc.	**2** Mellon Bank Corp.	**2** Harley-Davidson, Inc.	**2** Phelps Dodge Corp.
3 Northrop Corp.	**3** The Dun & Bradstreet Corp.	**3** Prudential Insurance Co.	**3** Great American Management & Investment, Inc.	**3** Westvaco Corp.
4 Allied Signal, Inc.	**4** Helene Curtis Industries, Inc.	**4** Chemical Banking Corp.	**4** Outboard Marine Corp.	**4** Bandag, Inc.
5 Grumman Corp.	**5** Marriott Corp.	**5** The Travelers	**5** Deere & Co.	**5** Raychem Corp.
6 Gencorp, Inc.	**6** Reader's Digest Association, Inc.	**6** Bankers Trust New York Corp.	**6** Caterpillar, Inc.	**6** Cone Mills Corp.
7 Textron, Inc.	**7** Kellwood Co.	**7** Crestar Financial Corp.	**7** Navistar International Corp.	**7** Polaroid Corp.
8 McDonnell Douglas Corp.	**8** Browning-Ferris Industries, Inc.	**8** Cigna Corp.	**8** Harnischfeger Industries, Inc.	**8** West Point-Pepperell, Inc.
9 General Dynamics Corp.	**9** International Flavors and Fragrances, Inc.	**9** American Express Co.	**9** Nortek, Inc.	**9** Willamette Industries, Inc.
10 Raytheon Co.	**10** Emerson Electric Co.	**10** Primerica Corp.	**10** Tecumseh Products Co.	**10** 3M Co.

discussion of our annual Trend Survey, these companies and these IS executives do not live in some trouble-free parallel universe (see story page 8). They are struggling hard to keep budgets in trim, improve productivity and reduce inefficiencies of all kinds.

The companies listed below are grappling with those problems and many others and they are winning. Furthermore, they are making smart and aggressive use of information systems to do it.

Importance of teamwork

Chief executive officers and other top executives from *Premier 100* companies also take turns discussing what exactly they expect from their IS departments and their IS executives and how they view their own role in enabling the contribution.

In a one-on-one with managing editor Joyce Chutchian-Ferranti, Ron Gidwitz, CEO of cosmetics giant Helene Curtis Industries, describes his part as cheerleader to Thomas Gildea's technology quarterbacking.

Unorthodox? Maybe. But then there is very little that's down-the-line conventional about the ways in which IS departments are now orienting and organizing themselves.

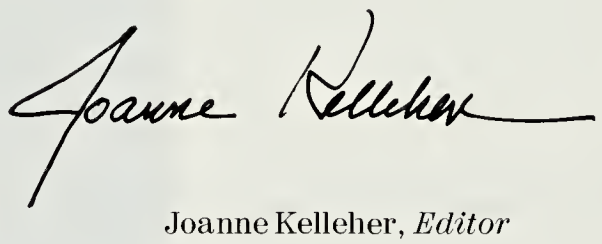
You'll notice the word "team" pops up a lot. Team formation is only one aspect of the changes sweeping across the IS function. In an increasing number of instances, systems personnel are blending into other departments, becoming technically savvy members of the marketing department or distribution or whatever.

Some IS staffers are attending creativity seminars to break the hold of old habits. Others are climbing mountains together to learn the value of cooperation. Still others are leaving their keyboards to stand behind cashiers' desks or field customer calls, doing what Wal-Mart Executive Vice President Bob Martin refers to as "eating what we cook."

That cooking is taking place at microwave speed, too, as modular and iterative system development becomes the order of the day and, for many, applications become something you create today for possible replacement in six months.

These are big, difficult adjustments, but *Premier 100* companies tend to accentuate the positive. If systems are built quickly and obsoleted quickly, IS staffers aren't chained to the grind of maintenance for years at a time. Or if someone over at the plant has an idea for a system and you know you won't have a free hand or a free hour, then maybe the thing to do is give that person some funds and let him hire a contractor to go ahead without you.

Would you think of doing that? Well, Dan Dvorak at Whitman Co. subsidiary Pepsi Cola General Bottlers would. In fact, he did, and the system was a raging success. This drawing outside the lines thing really *can* work.



Joanne Kelleher, *Editor*

Acknowledgments

Computerworld *thanks the following consultants and research firms for their help in creating this year's* Premier 100*: Richard H. Nahmias, principal, Nahmias & Co.; G. Michael Ashmore, vice president, CSC Index, Inc.; Howard Rubin, president, Howard Rubin Associates, Inc.; First Market Research Corp.;* Computerworld *Database Division; and International Data Corp. We would also like to thank all the IS executives and their staffs for their time and patience in responding to our many inquiries.*

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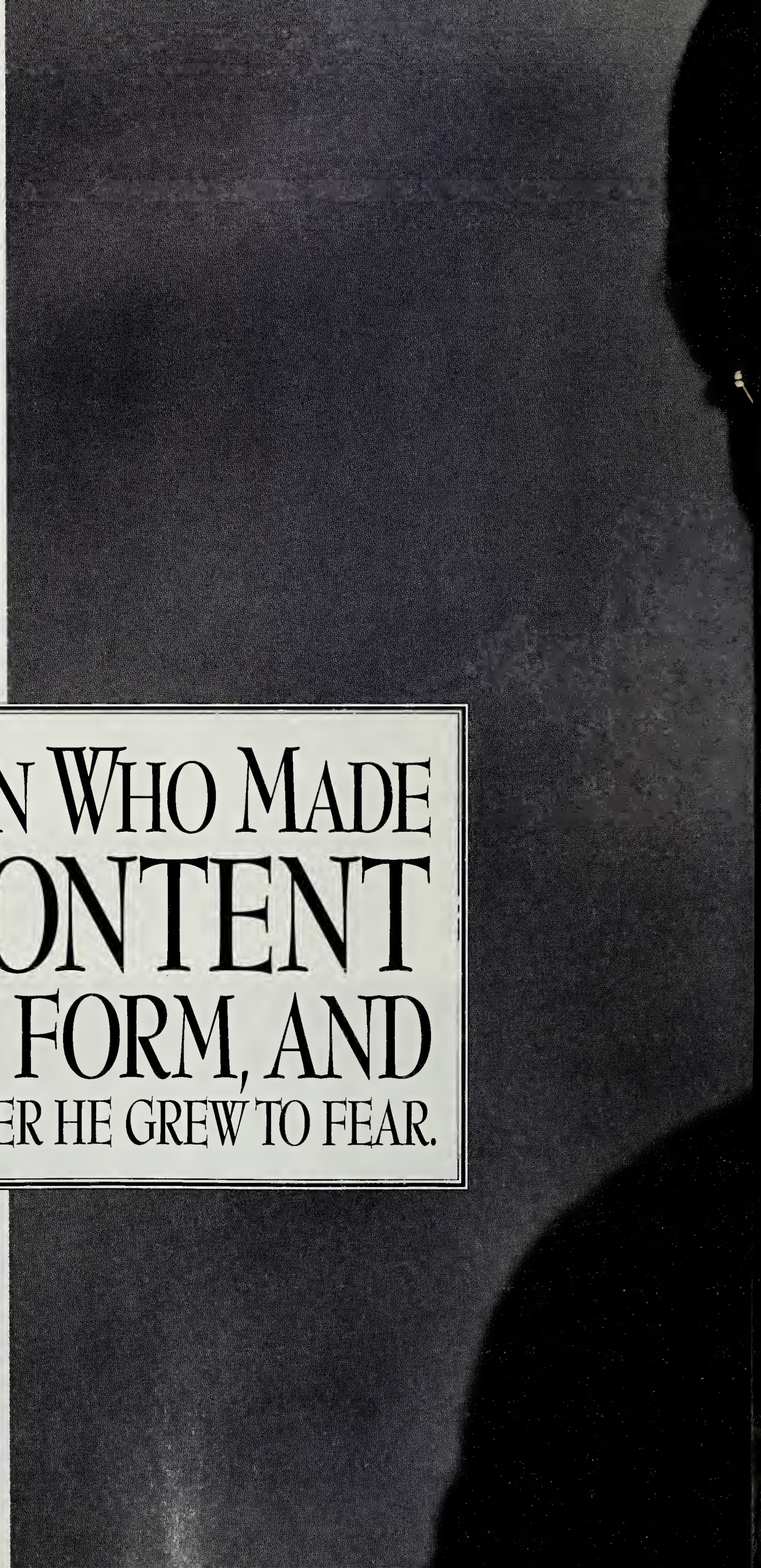
3 Oryx Energy Co.	3 Hershey Foods Corp.	3 Carter Hawley Hale Stores, Inc.	3 Yellow Corp.	3 Carolina Power & Light Corp.
4 Rohm & Haas Co.	4 Kellogg Co.	4 Albertson's, Inc.	4 Roadway Services, Inc.	4 MCI Communications Corp.
5 Unocal Corp.	5 Pet, Inc.	5 JC Penney Co.	5 American President Cos.	5 SCECorp
6 The B. F. Goodrich Co.	6 Hormel Foods Corp.	6 Wal-Mart Stores, Inc.	6 Federal Express Corp.	6 GTE Corp.
7 Vulcan Materials Co.	7 Merck & Co.	7 The Limited, Inc.	7 Airborne Freight Corp.	7 Northeast Utilities
8 Sherwin-Williams Co.	8 Schering-Plough Corp.	8 Food Lion, Inc.	8 Union Pacific Corp.	8 Southwestern Bell Corp.
9 Amerada Hess Corp.	9 The Quaker Oats Co.	9 McDonald's Corp.	9 UAL Corp.	9 FPL Group, Inc.
10 FMC Corp.	10 Whitman Corp.	10 The Home Depot, Inc.	10 Consolidated Freightways, Inc.	10 AT&T



THE MAN WHO MADE DISCONTENT AN ART FORM, AND THE COMPUTER HE GREW TO FEAR.

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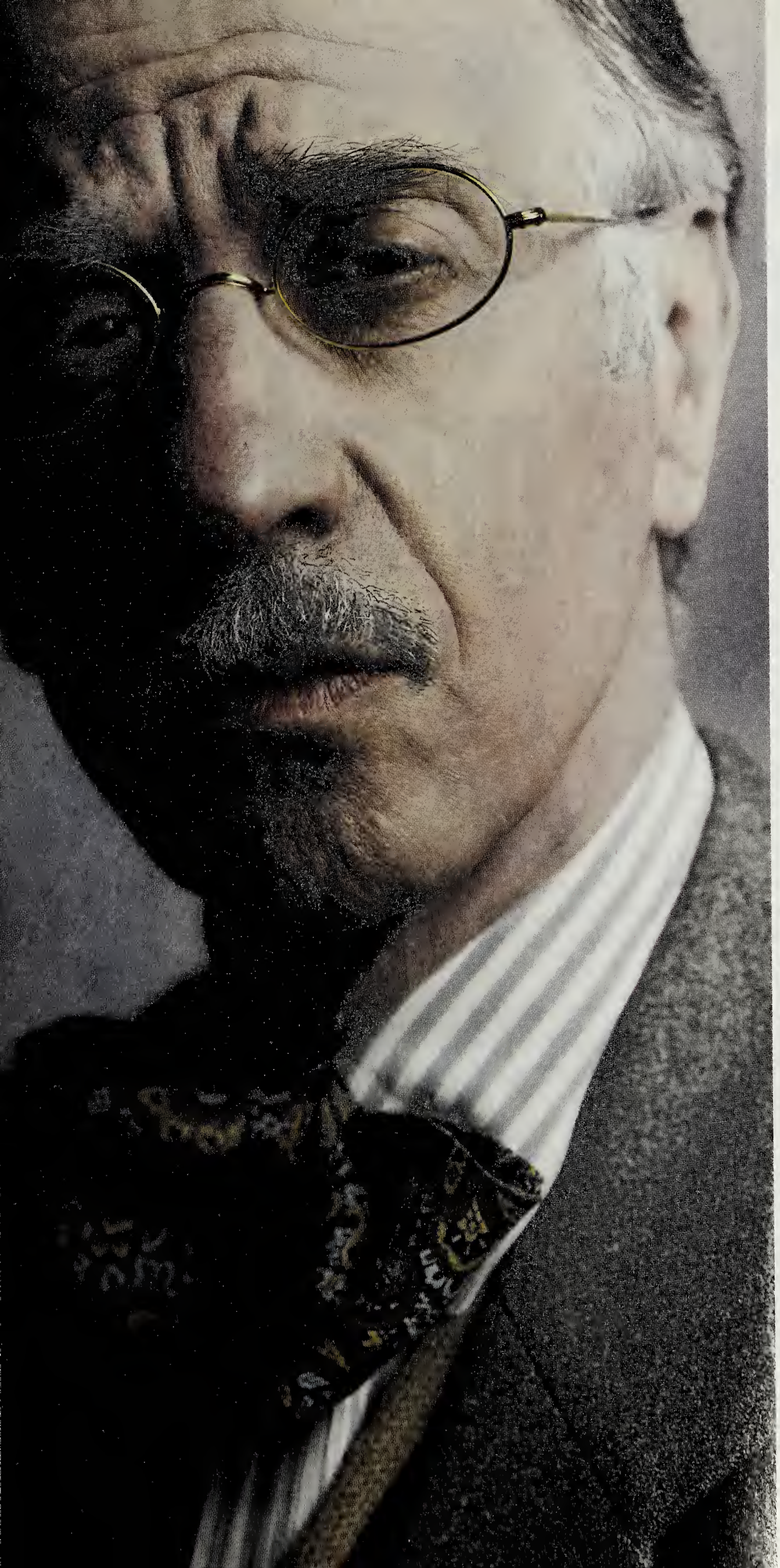

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IT'S all IN THE numbers

BY MICHAEL SULLIVAN-TRAINOR

The phrase "on the horns of a dilemma" could have been coined to describe the state of mind of *Premier 100* information systems executives in 1993. Every year we survey these leading executives about the issues, trends, challenges and choices they are facing. This year, it's clear that the often-opposed goals of budget-cutting and new application creation are, and will continue to be, the major preoccupations for these IS chiefs at least through next year.

For 1993, budget cutting and budget stretching have been foremost on the minds of IS executives: 45% put budget pressures at the top of their list of current challenges. But looking ahead and hearing an increased clamor for fresh systems, survey respondents reversed the order of top priorities for 1994 and emphasized demand for new applications.

Pressure points

Demand for new applications will soon outweigh budget pressures for the majority of IS executives, but business management expectations will also become more of an issue

	1993	1994
Budget pressures	1	2
Demand for new applications	2	1
Platform downsizing	3	4
Business management expectations	4	3
Network integration	5	6
Need for staff retraining	6	7
System integration	7	5

(Ranking based on 64 *Premier 100* companies that named each issue as their biggest challenge)

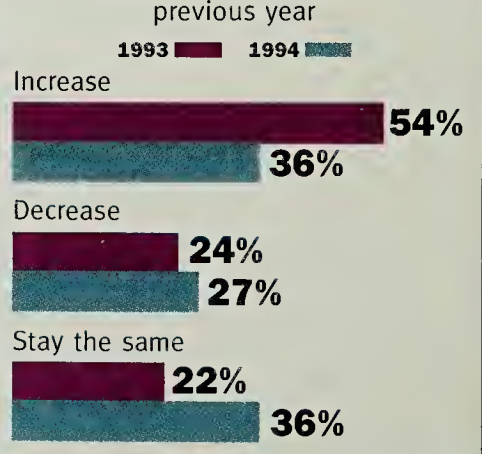
Resource stretch

This is no indication that IS executives expect to be rolling in resources anytime soon. Corporate wallets did open up a bit this year, but many who reported budget hikes this time around expect flat budgets next year. What the responses do seem to reflect, however, is the fact that the performance bar is rising rapidly for IS, as top managers look to information systems to help them make companies leaner, more responsive and more competitive.

In fact, business management expectations, which only 12% mentioned as a major challenge for 1993, take a major leap as IS executives contemplate challenges for 1994. Almost a third see satisfying these expectations as one of their biggest looming tasks.

Budget bounces

Percentage of respondents whose budgets are changing or remaining the same from the previous year



Expectations

The expectations of top corporate management are certainly a factor. While the number of IS executives who reported increased scrutiny from

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39 ❑ Telecommunications
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Is funding for information services being transferred from IS to business units?

YES 55%

No 45%

top management and shareholders did drop back somewhat from last year's record high, 67% felt an uptick and fully 95% said they were either getting more attention from those quarters or about the same amount as last year. Because last year was unprecedented in terms of the glare under which IS felt it was operating, that's not exactly a sign of lessening attention.

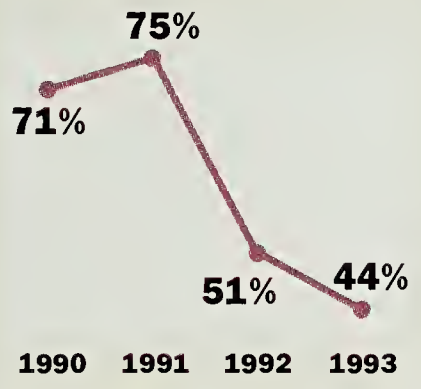
Equally significant, however, is the fact that more business units are willing and able to take on management of their own information systems if IS isn't up to the task. Lowered central IS budgets aren't all the result of belt-tightening, as is clear from the fact that 55% of the IS executives surveyed reported some funding for information services is now going directly to business units.

Power sharing

Does that mean IS is being cut out of the loop? In some cases, yes. In most cases, no. Much of the transfer of authority and funding is happening at the instigation of IS executives who realize if the imperative is service to internal customers and to the business, their job is less to control than to enable.

Backing off the edge

Percent of respondents who said leading-edge technology is critical or important to their organizations



Client/serverizing

Most IS organizations say client/server will be the most critical technology for competitive success in the next five years

Client/server	45%
Open systems	20%
EDI	17%
Object-oriented	13%
Distributed RDBMS	8%
Wireless	8%
LANs	6%
EIS	5%
Imaging	3%
Groupware	3%
GUIs	3%

Risk aversion

Given the turbulence of today's business environment, the pressing need for new, flexible applications and the integration tasks they already face, IS executives are not much inclined to experiment with untried technologies. Most want to stay well clear of what they refer to as the "bleeding edge." Interest in implementing leading-edge technology has plummeted during the past couple of years. In 1991, 75% of the IS executives at leading companies said it was critical or important. This year, only 44% reported that level of interest.

And that wariness extends not only to gee-whiz gizmos but to seemingly mainstream initiatives such as client/server and open systems. Although IS executives report high interest in both of these, it appears to be a browser's interest. Talk to them about actual implementation and the time frames are either long or vague. For example, 61% have no target date for downsizing the majority of applications and, of those who do, the greatest number see this happening in two to four years.

Customer service

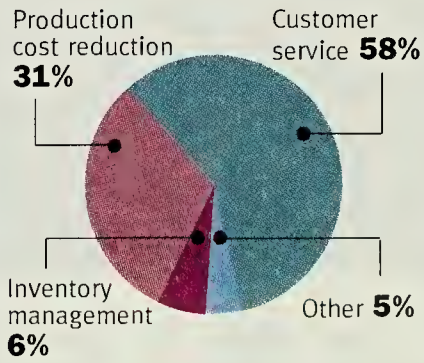
There is a strong indication that IS and other executives are coming together on one concept: Providing the best customer service possible is the No. 1 business priority and therefore the No. 1 IS goal.

Our survey figures pinpoint sales and marketing as the user department receiving the most IS attention and the one that is most likely to be affected by re-engineering efforts. Manufacturing improvements are a second priority, with finance and administrative changes close behind.

All in all, the ride continues to be a rocky one for most IS executives. But there is little likelihood of a dull day. ■

Attention-grabbers

What is the top business priority that IS supports?



Which user department receives the most IS attention?

Sales and marketing	58%
Manufacturing	27%
Finance/administration	19%
Distribution	13%
Engineering	5%
Research and development	3%
Corporate	3%

(Percent of respondents; multiple responses allowed)

No matter what business you're in or what process you're trying to improve, the basic goal these days is always the same . . .

EXPEDITE!

BY ALICE LAPLANTE

Ethel Dufbaeck uses WILIS to manage overseas stock orders at Becton, Dickinson

TWO YEARS AGO, Ethel Dufbaeck's job was a lot harder than it is today.

Back then, Dufbaeck was struggling to control rising customer complaints, inventory overstocking charges and inflated shipping costs. As inventory controller at Becton, Dickinson & Co.'s European affiliates, it is Dufbaeck's job to make sure overseas representatives of the $2.3 billion medical supplies and diagnostic equipment manufacturer have enough product on hand to meet customer demand. But it was difficult for Dufbaeck, who is based in Meylan, France, to get timely information from the firm's Franklin Lakes, N.J., headquarters. She would call, fax and otherwise scour the distribution chain for clues about when she could expect shipments to arrive at her Belgian distribution center.

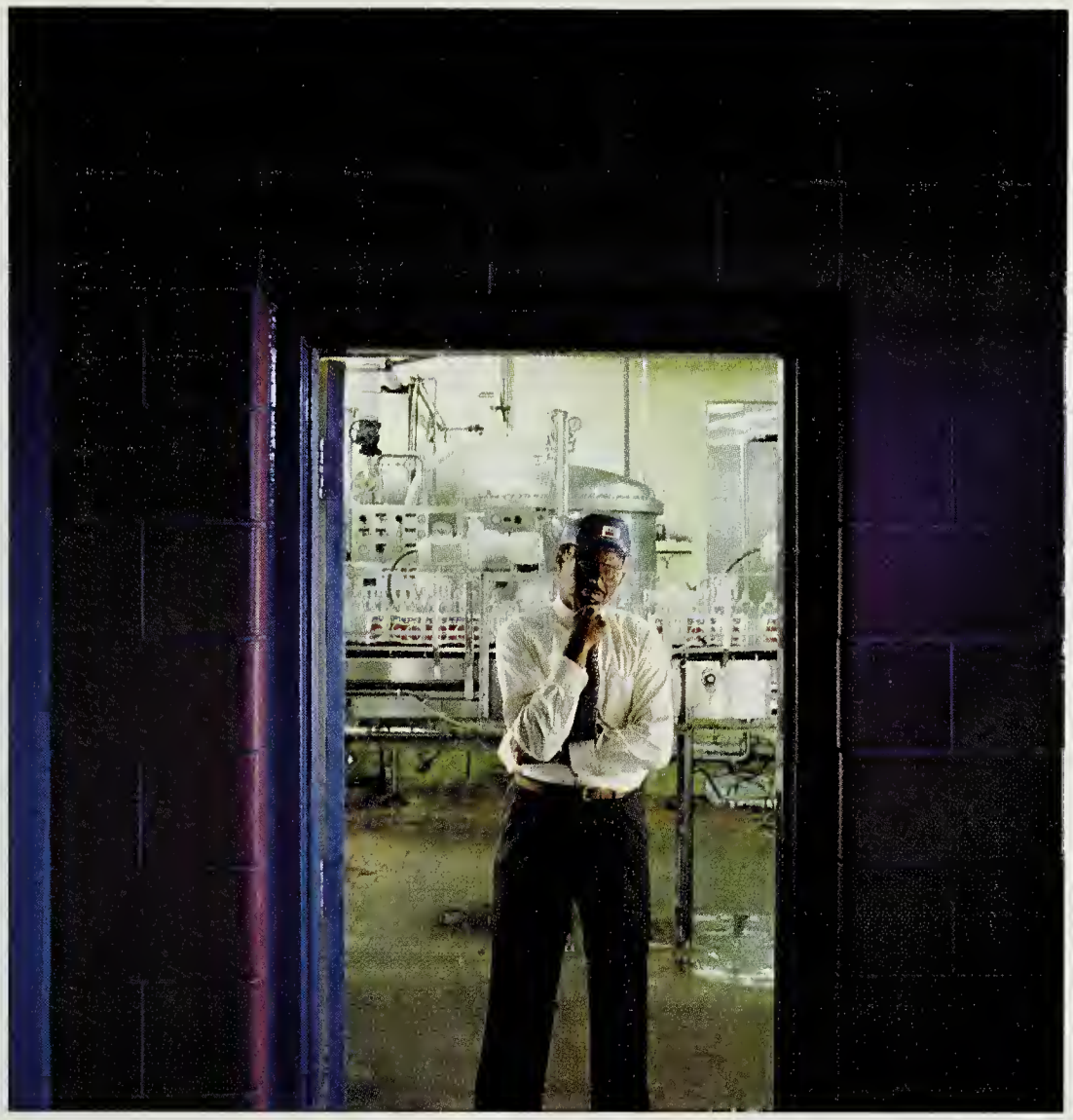
"There was the time difference, so I'd wait until late afternoon to call my contacts in the U.S.," Dufbaeck remembers. "They would be busy, or out to lunch or on vacation. When they called back, I'd be busy. Sometimes it took two or three days to connect."

Shipping errors, warehouse delays and foreign customs bureaucracy could easily hold up product deliveries. So, lacking hard information, Dufbaeck often overstocked key items to avoid running out. She would also ask for emergency air delivery — much more expensive than ocean transport — only to find that a critical shipment had already arrived at customs.

That hasn't been necessary for roughly 18 months, however. Now, whenever Dufbaeck is

PHOTOGRAPHY BY ALAIN KELER/MATRIX

concerned about a shipment, she logs on to Becton, Dickinson's on-line Worldwide Inter-Company Logistics Information System (WILIS), which tells her what has been shipped and when she can expect it to arrive. "I even know the container number for each order so that when a shipment arrives at customs, I know how to prioritize unloading activities," she says.



Ken Moore uses a LAN-based system to track the use of Pepsi equipment

Teaming up

WILIS is an example of an information system that U.S. businesses are discovering is virtually indispensable — a system that expedites delivery of products and services by unknotting the communications chain. It is also an example of what can be done when business and technology people put their heads together.

One hallmark of a stellar organization in this final decade of the century is that it no longer treats information technology as separate from the business but as an integral part. As a result, in really effective companies, system ideas are as likely to come from midlevel business managers, factory-line workers and clerks as they are from the information systems staff or top company managers. (For more on how IS organizations are reshaping themselves to accomplish this, see "The reincarnated organization," page 23.)

Tom McDonnell, WILIS project manager and technologist permanently assigned to Becton, Dickinson's International Distribution Services Division, sits in on strategic meetings as a senior member of the division's management team. As a result, he was acutely aware of logistical difficulties faced by Dufbaeck and her counterparts around the world.

What is effective?
61%
of IS managers view systems management as the initiator of business process change.

Because McDonnell is also a member of the worldwide information technology team that oversees long-term IS goals and architectural directions, he knew the technological time was ripe to pull together some formerly disparate data sources into one on-line system: Roland "Chip" Cyr, vice president of information technology, was spearheading a move to a new global information architecture.

Whatever works

Convergence of needs and resources doesn't happen as a result of blind luck. Successful IS organizations don't take the chance that a business opportunity might go begging for a technology solution. They make sure savvy business executives not only know who to call when they see something on the horizon, but they also get the resources they need, even if it means reaching outside the company.

That's what happened when Ken Moore, engineering manager at Pepsi-Cola General Bottlers, came up with a scheme to enhance maintenance operations at the Munster, Ind., plant where he worked. Moore brought his idea to Dan Dvorak, vice president of MIS at this $139 million canning and bottling subsidiary of Rolling Meadows, Ill.-based Whitman Corp.

Dvorak realized the economic value of what Moore was proposing — a system to track the use of Pepsi's bottling and canning equipment and automatically notify plant engineers when preventive maintenance should be scheduled, work orders issued or storeroom inventory replenished. The only problem was that Dvorak was engrossed in a systems overhaul in 1992 that meant completely replacing all of Pepsi-Cola General Bottlers' hardware, software and telecommunications infrastructure.

His hands full, Dvorak might have put the project on a waiting list. Instead, he let Moore hire an external systems integrator to install a local-area network-based system in the Munster bot-

PHOTOGRAPHY BY KEVIN HORAN

At effective companies, systems ideas are as likely to come from midlevel managers and line workers as from the IS staff.

tling plant. Word of success spread quickly, Dvorak says, and soon other Pepsi bottling plants began clamoring for the application.

Cost was a big concern when these requests started rolling in. Pepsi didn't have the funds to install PC LANs in each plant. Dvorak was busy switching Pepsi operations from a distributed IBM Application System/400 and System/36 architecture to a Hitachi Data Systems Corp. EX-60 mainframe, converting the separate and incompatible databases supporting Pepsi's 18 plants to a single relational database architecture. Dvorak says he thought the two projects could merge. So he took the functional model of the LAN software already running in Munster, developed a mainframe equivalent and installed it in Pepsi's Chicago plant. Before long, bottling facilities in Texas and Indiana were on the bandwagon.

Using Ken Moore's systems as a model, IS developed a mainframe version for all the plants.

"This was a raging bargain from a cost point of view," Dvorak says. The LAN version would have racked up $500,000 in hardware and software expenses alone; the mainframe version — installed across all Pepsi plants — cost less than $100,000.

Technology transfer

If flexibility in providing resources is critical to giving business what it needs, when it needs it (see related story this page), so is creativity in finding ways to piggyback technology projects and exploit knowledge resources.

IS professionals at FMC Corp. are becoming experts at this particular efficiency exercise. FMC is a diversified $3.9 billion firm in the chemical, defense systems and heavy machinery industries. Because the company is highly decentralized, FMC strategic IS development projects are left to its operating divisions; the Dallas-based corporate data processing center acts as a facilitator to ensure that no one reinvents the wheel. (To read about how another company, The Hartford, handles this kind of coordination, see "The great platform leap," next page.)

Tinish Mehta did not intend to become a corporate resource when he decided to tackle a little process redesign in 1990, but that's exactly what he's become, thanks to the social networking skills of FMC's data center staff.

A manager in the finance department at FMC's $800 million Ground Systems Division in San Jose, Calif., Mehta put together a focus team in 1990 to study how the accounts payable function could be streamlined. He subsequently oversaw development of a client/server imaging system from FileNet Corp. that links to FMC's IMS accounts payable database in Dallas and automates the validation and payment of vendor invoices.

"This was an eye-opening experience," says Mehta, who acknowledges the project hit a number of snags, although he considers it a success.

To ensure that this experience — good and bad — didn't go to waste, Joe Dworak, a senior business analyst at FMC's corporate data center in Dallas, was brought into the loop. When Dworak heard that one of FMC's chemicals groups was also investigating imaging, he arranged for a "knowledge transfer" between that site and Mehta's group. "We're making sure that everything we learned about the hidden expenses and technological hurdles is passed along."

Although there is no rule that says divisions should consult the central IS staff on initiatives, Dworak says they are doing so more often. The reason? "They're finding that we're helpful at locating and leveraging the pockets of existing technology knowledge." ■

—Alice LaPlante is a free-lance writer in Palo Alto, Calif.

THE DRAFT PICK OPTION

HELPING BUSINESS units deal with emerging business situations often means giving them the firepower to do much of the work themselves.

In 1987, US West, Inc.'s Controller and Vice President of Finance Jim Helwig started looking for IS help. The 1984 divestiture of AT&T had left US West as the parent company of three Baby Bells: Mountain Bell, Northwest Bell and Pacific Northwest Bell. Helwig said he felt it was inevitable that these three entities merge operations and, when that happened, technology would play a key role in reconciling and optimizing financial functions.

In 1990, when US West consolidated its regional Bell operating companies, Helwig had a three-year head start. He made Judy Dimino, a technologist from US West's centralized IS group, part of his permanent staff, giving her a department of 70 certified public accountants and financial analysts to create requirements for a merged and improved financial system — Profit (Professional Financial Information Tools).

Dimino has a close working relationship with US West's IS department and with R. B. (Bob) West, US West's director of corporate systems, who provides her with programmers and technical consultants to code Profit applications.

The payoff? The $33 million Helwig has spent thus far has been funded by operational savings from the incremental rollout of Profit, which will be completed in 1995.

THE great PLATFORM leap

BY ALAN RADDING

If changing architectures have you and your staff ready to jump off the nearest high structure, you're not alone. *Premier 100* information systems departments wrestle with the same daunting array of unknowns: relational databases, graphical user interfaces (GUI), legacy data, telecommunications and a confusing array of technologies. Many of them have discovered, however, that it's a lot easier to preserve sanity and steer clear of architectural disaster if you employ that time-honored safety technique known as the buddy system.

Buddies can take many forms. IS managers at some of these companies say the best course for them is to concentrate on design and planning. When it comes to implementation, they step back and leave the shirtsleeves work to their buddies — the vendors and integrators.

In other cases, the designated buddies are actually corporate technologists or IS managers from other areas of the company who share what they've learned on their own projects to keep their colleagues from stubbing their toes in the same places or investing time researching what's already known. And last but not least, there is the business-buddy option. Some companies are instituting a joint development process that pairs IS and business personnel in project teams, where development becomes everyone's primary job until an appropriate system is delivered.

Warner Schlais, director of planning and technology at UAL Corp. in Chicago, is an advocate of the first option. "Using the vendors and integrators minimizes the risk," he says. Of course, this isn't a labor-free solution. As Schlais explains, laying the groundwork for the contractor re-

Continued on page 16

ILLUSTRATION BY WARREN GEBERT

Even now, Chicago's scofflaws recall the sport warmly. ◈ You took a parking ticket. Folded it. Crumpled it. Then, simply booted it away. ◈ Thirteen thousand parking tickets written each day. Maybe, on a charitable day,

How A New Type Of Computer Put A Stop To One Of Chicago's Favorite SPORTS.

10 percent paid. ◈ But if you're thinking of playing that game these days, officials have one word of advice: Don't. ◈ Sun computers have been installed. And they are very, very effective. ◈ Claim the meter was broken, and a Hearing Officer will check a "meter database" on a Sun computer. Protest the ticket isn't yours, and a scanned image of the original is pulled from a database. Yell that you're in a hurry, and all these

jobs can be done at once, because Sun computers can do more than one job at once. ◈ "With document imaging based on Sun hardware, we save citizens time, and the city money," Judith Rice, Chicago's revenue director, proudly says. ◈ There's more to this story, of course—revenue increases of 400 percent, limiting property taxes—but it looks like our time is up. ◈ And you know what that means. ◈ Sun computers. Just the ticket, it seems, for the City of Chicago. ◈ More than 135,000 organizations are using Sun systems, powered by the SPARC® chip and the Solaris® operating environment, to gain a competitive edge. The City of Chicago is just one. To learn how you can benefit, call 1-800-426-5321, ext. 605.

Sun

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The Network Is The Computer

Continued from page 13

quires spelling out your requirements in painstaking detail. By the time his group at UAL pulled together its technical specifications and end-user definitions of required functionality, it had produced something close to the heft of a prolific author's collected works. The specification document for a client/server-based systems maintenance application, for instance, exceeded 100 pages.

That particular application was designed to give maintenance controllers faster and better-coordinated access to flight information and reports from pilots and ground crews.

Project manager Sandy Kingery says UAL couldn't have implemented the application alone. Combining Unix systems equipped with the Open Software Foundation's Motif as well as Sybase, Inc., IBM and Unisys Corp. mainframes and Integrated Services Digital Network (ISDN) voice and data services would have been overwhelming without outside assistance. But the experience also made clear the importance of knowing what you want and sticking to it.

61%
of IS managers do not have a target date for downsizing most of their applications...

The design called for the use of ISDN, which would let developers give the controllers the ability to screen voice and data messages according to defined priorities. "We wanted an open systems interface to the ISDN Basic Rate telephone switch, but AT&T [the integrator] wanted to use its proprietary interface," Schlais recalls. The developers made it clear that if AT&T wanted the job, it would have to modify its interface to comply with their requirements.

...and 26% of those who do have a target date say it will happen in two to five years.

Since beginning its move toward a three-tiered architecture and distributed systems three years ago, Northrop Corp. has also discovered that vendor partnerships can ease the transition to new architectures and help keep overhead low. "There is no way we can keep up with technology by trying to do it all internally. We have to partner," says Herbert Anderson, vice president and general manager at the Northrop Information Services Center in Pico Rivera, Calif.

But Anderson says he expects true partnerships, not the usual vendor/customer relationship under a fancy name. "We're not just hiring subcontractors; we are creating an entire arrangement where we will share costs and share opportunities," he says.

For example, Northrop recently hired a vendor to write a system that other aerospace contractors may also want. Northrop developed the specifications and brought the business knowledge, while the vendor partner wrote the code. As part of the deal, Northrop insisted on a share of any future sales of the system.

At The Travelers, risk minimization is also accomplished through sharing, but on a strictly internal basis. What the company has done is create central pools of expertise that can help to

The Travelers' Ellen Rasmussen talks IS managers through the hard questions surrounding client/server conversion

PHOTOGRAPHY BY MAX AGUILIERA-HELLWEG

transfer hard-won technology lessons across organizational boundaries. Ellen Rasmussen, who holds the title of technical director/client/server architect at the Hartford, Conn.-based life insurance company, might also be considered chief lifeguard/preventer of avoidable injuries.

First things first

In Rasmussen's estimation, the biggest mistake people make when they tackle client/server computing is to start with a tool and then try to bend business requirements to the capabilities of that tool. Her job, she says, is to make sure system development projects at the company take the reverse approach.

She does this, she says, by asking the whys and what-ifs, literally talking unit IS managers through an analytical process. This technique of constructive probing has now been formalized and institutionalized in a process called Technical Information Developer Support (TIDS, pronounced "tides") that puts Travelers' collective development experience at the fingertips of IS managers in individual business departments.

The way TIDS works is that all system design proposals for business units are submitted for review by a committee of Travelers' most experienced technologists, who discuss the goals and methods and offer suggestions for improvement.

The ultimate decision on how to proceed lies with the business unit, Rasmussen says, but the TIDS committee delivers a formal written report that stands as damning testimony if someone ignores its input and plunges headlong into a disaster.

Robert Tofil, IS director for Travelers' personal lines technology, brought the designs for a client/server-based counselor's workstation system to the TIDS committee. This system would replace a mainframe terminal used by customer service "reportentatives" (counselors) to find answers to customer questions, greatly expanding the amount of information available and the speed of access, as well as the variety of possible queries.

Tofil's design passed muster, but the committee questioned his implementation plan and recommended he put some client/server expertise on his team. Tofil subsequently engaged a Travelers technology transfer specialist suggested by the committee for 10 months to bring his people up to speed on database access, GUI technologies such as Easel Corp.'s Easel and OS/2.

Tofil says he likes the TIDS process because it provides an extra measure of comfort. "TIDS helps us avoid doing something stupid," such as venturing into client/server development without an experienced person on the team, he concludes.

At Carolina Power and Light Corp. (CPL) in Raleigh, N.C., the preferred method of avoiding missteps on ambitious architectural restructuring projects is through formal teaming of technical and nontechnical personnel on the system development teams. Every project is sponsored by a top corporate officer and carried out by co-managers, one from IS and one from the business unit. These teams work together, elbow to elbow, for the duration of a project, which may be several years.

This technique, which CPL's Chief Information Officer R. Thomas Dwyer says helps to ensure that emphasis is placed on process re-engineering rather than technology, recently carried the company though a massive re-architecting of its 20-year-old customer information management (CIM) system.

The CIM project, which began in 1988 and culminated in December of last year, involved transferring a reworked version of the customer service system from a strictly mainframe environment to local-area network-based PCs running a mixture of batch and on-line transactions accessing a DB2 on the mainframe. The first step, however, was identifying 250 customer service subprocesses as candidates for re-engineering.

Power teams: CPL's Thomas Dwyer (left) and business partner Norris Edge tackle CIM re-architecting

Bruce Anderson, manager of systems development and support and co-project manager, says there is no question that having business users as part of the team exerted a strong influence on the design.

Left to their own devices, Anderson says, developers would have given priority to the most complex transactions, such as a meter cut-off, but business representatives insisted the team concentrate on activities that take place while customers are on the phone with service representatives. "This meant that a billing question gets a higher performance priority than some more complex back-office task," he says. ■

— Alan Radding is a free-lance writer in Newton, Mass.

PHOTOGRAPHY BY SIMON GRIFFITHS

Behind every great CIO . . .

CEOs talk technology and tactics

By Michael Sullivan-Trainor

Satisfy your users first, count your transactions second. That's the message for information systems executives who want to garner the highest performance ratings from their company's chief executives.

This year, the *Premier 100* added a chief executive criteria, in which CEOs, CFOs and COOs were asked to rate their IS department. Those executives who gave their IS organizations the highest ratings in the satisfaction survey were unanimous in placing happy users as the top priority for IS.

"The key to measuring IS performance is determining whether or not the IS organization is allowing its users to do what they need to do," says AMR Corp.'s CEO, Robert Crandall. "We want a larger percentage of industry revenue, and we can't get it unless IS provides its users with the right tools."

Crandall was among the 26% of chief executives who rated their IS organization as very good, the highest rating. The majority of top bosses, 58%, said their IS groups were good. Another 16% rated them average.

AMR's Robert Crandall: 'IS has got to change itself and be the educational arm within the company'

PHOTOGRAPHY BY REID HORN

How they measure

"Although we place a high value on the contribution of IS, we do not use specific performance measures to gauge its effectiveness," says Gencorp, Inc. CEO A. William Reynolds. "Rather, we measure the effectiveness of IS by the degree to which it supports the strategic plans of our business units. This support is the single greatest benefit provided by IS."

These executives collect their performance information both formally through meetings and user surveys and informally through chats with key users and IS personnel.

"If we're not happy with a part of information systems, it doesn't take me very long to find out," Crandall says.

Tight business ties

A whopping 64% of chief executives say IS is very closely linked to their business strategies. Another 34% say it is somewhat linked, and 2% say it's not very linked.

Even more significant is the fact that 94% of them say the role of technology is increasing.

"Information systems is one of our most important tools in assisting the firm to manage risk for ourselves and our clients," says Charles Sanford, CEO at Bankers Trust New York Corp.

"We couldn't run the company

Gencorp CEO A. William Reynolds measures IS based on how well it supports the strategic plan

without it," says Miles L. Marsh, CEO of Pet, Inc. "We need the ability to manipulate timely and accurate data about our business. Without information technology, we couldn't get the information we need."

Motivating CIOs

How do the most satisfied chief executives motivate their top IS executives? "Scare the crap out of them," Crandall says.

Seriously, Crandall spurs his top IS executives to action the same way he does other business executives. "Make sure everyone has a clear understanding of what the company as a whole faces. Give them world-class tools to work with. Expect them to be a leader in all the elements of their jobs. Ultimately you want them to motivate themselves," he says.

How IS executives are viewed by their bosses also plays a significant role in their motivation. "Involvement on the strategic planning process and support of the plan is also a major source of motivation to IS executives," Reynolds says.

"The information resources executives participate in the normal executive compensation arrangements. That's the hard side of the issue. On the soft side, our management is very inclusive, and information resources are viewed as an important part of senior management," Marsh says.

IS accomplishments

The benefits of IS are too numerous to count, many chief executives say. "Competitive superiority. You have to have a world-class IS operation as a key building block in the pyramid of a world-class airline," Crandall says.

The chief executives also named recent IS projects that contributed to their favorable views:

"We're changing from conventional systems development practices to development methods on PC platforms using client/server technology," says Albertson's, Inc. CEO Gary Michael. "The ability to develop easy-to-use systems in a short time is a paramount requirement for our corporation."

"Our information services is modifying the organization and skill set to keep up with all of the technology, which is constantly changing," Crandall says. "As user organizations handle more and more of the information technology issues, IS has got to change itself and be the educational arm within the company."

"We are supporting the 'Efficient Consumer Response' program within our industry. A number of our initiatives are directed at developing a closing link between the information systems of manufacturers and retailers to reduce inventory and cost," Marsh says.

Among the future technologies that chief executives see as important in the next five years are the following:

- **"Scanner technologies in the retail, warehouse, manufacturing and distribution areas.** These allow us to track detailed information about our business store by store. Access to this information is changing the way marketing is done in this business."
—Miles L. Marsh
- **"Massively parallel processors, workstations and graphics/information displays** are the most important future technologies."
— Robert L. Keiser, COO, Oryx Energy Co.
- **"We feel open systems and networks** will provide the framework for the information infrastructure that will allow Albertson's management to have timely information about all aspects of our business and be able to react accordingly."
—Gary Michael
- **"All of the technologies are blending together** so that they are becoming indistinguishable. Integrating them is one of the greatest future challenges."
—Robert Crandall ■

. . . is a savvy chief executive

PHOTOGRAPHY BY JACK VAN ANTWERP

INTERVIEW

'I'm The Guy Who Leads The Cheers'

BY JOYCE CHUTCHIAN-FERRANTI

Helene Curtis' CEO Ronald Gidwitz

RONALD GIDWITZ *is somewhat of a youngster among CEOs. That, he says, may have something to do with how he relates to information technology. So may the fact that he briefly worked as a Fortran programmer one summer between college years. Now, standing on the sidetines of information systems at Helene Curtis Industries, Inc., the $1.1 bittion personat care products company, Gidwitz tooks at IS as being the right arm to the business. Senior editor Joyce Chutchian-Ferranti spoke with Gidwitz about how he sees the impact of information technology in supporting business goals.*

How important is information technology to your company? Very important. The collection, dissemination and analysis of information can make a real difference in how we run our business. We spend a lot of time thinking about what we do and how we use our information and how we can do that better and more effectively.

How involved are you in IS decisions? I'm a great cheerleader. I'm the guy standing on the sidelines rooting for the players. I'm not involved with the intricacies of each system as it is going in, but I certainly am interested in how well we take advantage of the investments we make in systems.

What do you see as the proper role of the chief information officer? I think that if I'm a cheerleader, the CIO is the quarterback/playing coach. That's the guy who formulates the strategy, gets consensus and makes sure the execution is flawless.

As a chief executive, how do you communicate with IS executives? We communicate directly. I don't oversee things directly, but I look over their shoulder a lot. I'm involved in the strategic planning aspect. I review those plans and the annual operating plans.

Do you think having a knowledge of what systems can accomplish is the norm for CEOs? It's not the case now, but I think eventually it will be. There's clearly a generational difference between older executives and younger executives. Those who graduated from business school in the last 5 to 10 years and don't get a PC think they are being deprived of a piece of equipment that is going to make them effective.

On the other hand, you have executives who don't realize they can overcome the inability to use it. I'd like to think it's because I'm of the next generation of managers, which has some familiarity with this kind of technology. We didn't have computers when I was in school, but I did develop some programming skills in engineering school.

Where do you think most CEOs are in terms of technology? Most CEOs are somewhat older than I am and therefore are in many instances not regular consumers of data directly off the device. They get the information, but they get it through third parties.

Do you view IS as a support function or as a driver of the business? I don't believe it's a support function. They aren't directly involved in things like making calls on customers, but the systems are so integral to what we do that people couldn't live without them. We are looking to IS to help us develop our competitive edge to as fine a point as we can.

You've said that conditions are difficult in your markets; that you haven't, for example, seen a price increase for five years. Can IS make it easier to com-

pete and stay profitable in an adverse climate? There's not a whole lot of direct impact, but there are a number of ways technology has had an indirect impact. We've used IS to help us reduce our costs in a wide variety of areas, from distribution to order entry and our manufacturing processes. We've used them to help us do a more thorough job in our research area. Plus technology is a tremendous communications vehicle for our worldwide operations.

Can you think of a specific example of how information technology is supporting expansion, differentiation or any other important business goals for your company? It allows us to take marketing and sales data and translate it into information from which we can make real-time marketing decisions. By the same token, we can put that same information about our customers to work in our manufacturing plant and not have to guess at what the requirements are going to be for our factory.

How do you measure the effectiveness of your investments in information technology? Information is integral to everything we do. It's a process within a whole host of other business processes that enhance our business. We measure how good we are in terms of market share, sales growth and profitability.

What's the best thing that technology has done for you lately? It has made me far more mobile. I can be any place in the world now and it's almost the same as being in my office. I carry a laptop equipped with a fax board, and I can dial into facilities at the Chicago office and no longer be bound to the office. Also, although we're not quite there yet, we're seeing the creation of one virtual worldwide office.

You don't need to be all together to be able to interact well. We're using a variety of technologies. And that has enormous potential to be able to improve the effectiveness of how people work together.

How knowledgeable are you personally about computer systems? When I come into my office each morning, the first thing I do is turn on my machine. And then I get my coffee. I was a frustrated engineer when I was in school; I ended up being an economics major. I had programmed in Fortran, and for one of my summer jobs, I worked for an MIS department, so I feel quite comfortable with it.

Have computers improved the quality of planning and decision-making at the corporate level? Yes, but I would have said that 10 years ago. I think since then we've been incrementally honing our skills in those areas, and clearly, technology has helped us do that. But what strikes me particularly is the ability to be so much more productive. Information technology is helping us push aside all of the nonessential parts of what we do.

How has IS changed in the last few years? It hasn't changed all that much. It is an integral part of what we do. Asking how it has changed is like asking, "Has your right arm changed today?" It is just a part of us. ■

RONALD GIDWITZ: "We look at investments in information technology as investments in a tool for success"

PHOTOGRAPHY BY MICHAEL ABRAMSON

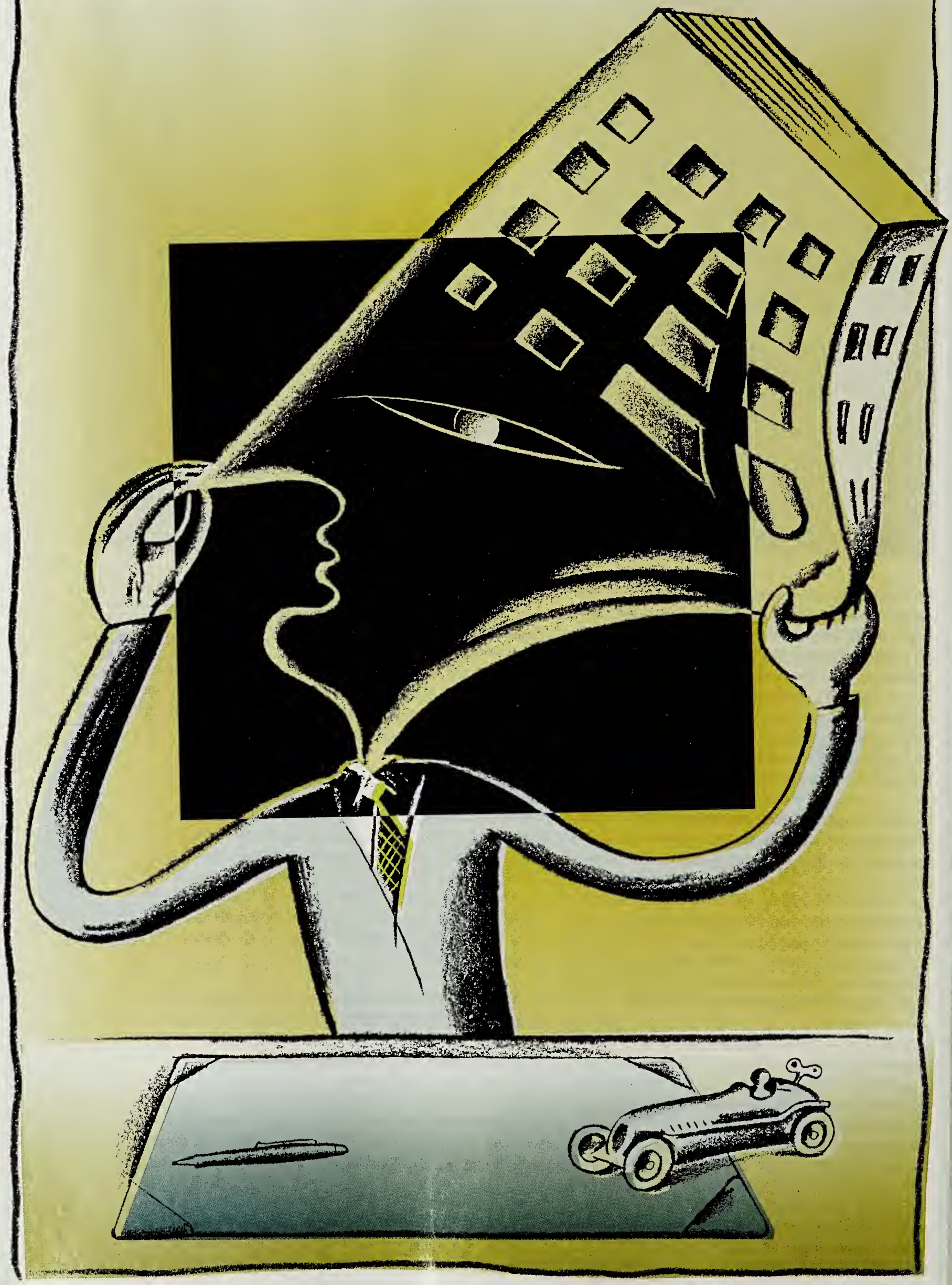


ILLUSTRATION BY FRANK VIVA

THE

REINCARNATED ORGANIZATION

Information services are changing shape and taking on new personalities

BY

Joanne Kelleher

When the world around you changes, you had better change, too. And that's exactly what effective information systems organizations are doing these days: Rapidly, and often radically, they are transforming themselves.

This isn't a matter of decentralization or recentralization. It isn't that simple.

Wal-Mart Stores, Inc. tried decentralization and a lot of other things in the past, says Bob Martin, executive vice president. All produced some benefits at the time, but none were sufficient by today's standards of what an IS organization must be and what it should do. That's why Wal-Mart decided to break the mold and start fresh with a structure predicated on something more fluid and dynamic than support of individual business functions.

The result? An information services staff largely composed of teams organized around strategic business goals that the company's executive committee identified. These goals are almost always broad-based, involving process and application changes in a variety of business functions. And as specific targets are achieved and new priorities emerge, teams disband and reform.

Anticipating support

This structure, Martin says, is flexible and much more compatible with the way businesses must operate now compared with the old functionally defined, react-mode model. "I've always taken the position that if users develop requirements and *then* come to IS, you're already behind."

Dennis Jones, vice president and chief information officer at Federal Express Corp., says that when a company or department is in that situation, it is "behind the power curve." And that's not a place he wants his department to be. "One of the chronic complaints you hear about the information technology function is that it is slow and unresponsive," Jones says, "and I believe the reason for that is the tradition that says you wait for the user to come to you."

At Fedex, that is definitely not the current operating model.

Although the reporting structure remains centralized, and the entire information technology staff marches to the same "guiding principles," most of the information technology staff members now park their computers in user areas. Several scores of them share office space with sales personnel and go along on calls to serve as technical advisers to customers interested in the options for system-to-system information exchange.

At this point, almost half of the company's package-handling volume is processed either through Fedex-developed desktop systems at customer sites or customized electronic data interchange connections.

Fedex aircraft control personnel are able to get planes landed, unloaded and back in the air faster with a new graphics-based system

All told, about 90% of the information technology staff is now considered part of the internal customer base, Jones says, with the remainder serving as suppliers of support services. It's a structure that has been evolving for some time, according to Jones, but it has really come together in the past couple of years.

At Duke Power Co., change has been more abrupt and, in some ways, more radical. Jimmy Hicks acquired his title, vice president of information technology services (ITS), a little more than eight months ago, after participating in a study evaluating how information technology was delivered and used at the company.

When he became involved with the evaluation of IS, Hicks was a customer — vice president at Power Delivery — and that customer perspective is something he is trying hard to retain and embed in the working processes of his new department.

Since his arrival, the top priority for the ITS department has been to figure out how to live up to its new name (it was formerly called the IS department) and create mechanisms to ensure that its operating agenda directly reflects business strategy.

Business users have played a lead role in the change process. Managers from various areas of the company were drafted to work full-time for four months with the ITS staff, determining how things should work and what it would take to make these new processes practical.

A number of major alterations in service delivery are under way as a result of this groupthink effort. Already, more than half of the technology service providers have been shifted from the ITS organization into business departments.

Off the bucket brigade

For both groups, job terrain is changing as radically as surroundings. Using remote management and troubleshooting systems, Hicks says he hopes to take most of the firefighting out of support jobs, freeing time for problem prevention and system enhancement. "Right now, these people are spending 80% of their time putting out fires and 20% doing things that add value to the business," Hicks says. "We want to switch that around."

Top staffing shifts

Premier 100 companies are implementing the following types of staff structures:

1. **Self-directed work teams**
2. **Staff in business units**
3. **Fewer programmers, more business analysts**

Application developers are learning to operate in a more modular and interactive mode. "We used to deliver major applications in big chunks," Hicks says. "We'd take on the world and spend three years designing and building a system. By the time it was delivered, the world had changed."

Not all the reforms entailed changes to the technology services function. Users had to mend some of their ways. In particular, they had to face the fact that diversity is not a desirable trait in systems.

"Getting the users to come up with single standards for desktop applications, network operating systems and network protocols was a struggle," Hicks says. "But they did it, and it is going to make a great difference."

Establishing standards and creating structures that help to ensure

PHOTOGRAPHY BY JACK KENNER

priority agreement between users and IS are recurring themes.

Recombining the elements

Phelps Dodge Corp. moved to head off problems with incompatible desktop systems and LANs a couple of years ago, moving the PC group into the domain of the telcommunications manager.

"A lot of the hidden cost of computing is PC support," explains Dudley A. "Mac" McRea, director of corporate IS. "And with more and more local-area networking, it is even more critical to make sure that, no matter what we do, everything is compatible and works everywhere."

The blending of skills and experience is also a theme in software development, where the company has created a software engineering group to work on client/server projects and provide a model of how such projects should be approached. It is no accident, McRae says, that the project manager was a mainframe database administrator.

Restructuring...
75%
are doing it.

"By bringing mainframe experience to this, we'll be addressing a lot of the big concerns about client/server — things like security and change management."

At Harley-Davidson, Inc., the primary vehicle for change is a companywide initiative called the Performance Effectiveness Process, which requires employees to evaluate their activities on a quarterly basis and draw up detailed commitments for upcoming work.

Goals and priorities are established not in isolation but in the context of teams made up of "stakeholders." In the case of IS, this means business users and suppliers of equipment and services, whether internal or external. No commitment is made unless all of the parties involved sign off on the goals and the specific targets by which progress will be measured.

The benefits of this approach are substantial, according to Rich Kolbe, IS director at Harley-Davidson. The process forces employees to analyze how and to what effect they are spending their time.

Randy Mott, vice president of the information services division at Wal-Mart, also counts a broadening of vision among the major benefits of his company's reshaping of IS.

"You get a cross-business focus as opposed to strictly departmental initiatives," he says of Wal-Mart's strategy teams approach. This offers the potential for more substantial and far-reaching improvements — not only because you work on business processes end to end but also because breaking down barriers between parts of the business helps dissolve walls between technical specialties.

In the past, Mott says, business requirements were too often forced to fit into existing technical niches. People would automatically grab for whatever they knew. Now that everyone has a broader frame of reference, they are less likely to default to narrow prescriptions.

Like Harley-Davidson, Wal-Mart is increasing the amount of individual responsibility. In the past, development managers at the company might have managed eight to 12 people, Mott says. Now, as "strategy managers," these same individuals might oversee twice as many. That, of course, gives each team member more influence, self-determination and responsibility.

Adjusting to new ways of thinking and operating isn't quick and easy. As Kolbe stresses, when you change organizational structure or job processes, you alter the dynamics of the workplace. "People feel more accountable, but they also feel more vulnerable ... outside their element of control. You can't change that in a day," he notes. ■

SMART RATIONING

When the budget is scarce, innovation is plentiful

BY JULIA KING

DOING MORE WITH LESS is as much a mantra at top-performing information systems organizations as anywhere else. *Premier 100* companies are not exempt from the current cost squeeze, but they approach this problem, as they do others, with a high-energy mix of "can-doism" and inventiveness.

At Engelhard Corp., a $2.5 billion specialty chemical manufacturer in Iselin, N.J., several years of aggressive cost-containment efforts, which resulted in successive budget declines, have made Stephen Pook, vice president of quality business design and information services, something of an expert in fat reduction. As his title suggests, however, there is more going on at Engelhard than simple belt-tightening.

Pook, who heads up a companywide re-engineering effort, is applying to the IS organization lessons in process change and quality improvement learned in other parts of the company.

For example, Pook is a strong advocate of regular price/performance benchmarking: Internal operations are regularly compared against outside providers, and anything that can't be done better and/or more economically in-house is outsourced.

PC support is now handled by an external provider. Engelhard closed down its data center and moved its IBM mainframes to facilities owned by PaineWebber, Inc. in nearby Seeaucus, N.J.

33% of the Premier 100 have had staff cutbacks this year.

Any IS organization that's concerned about dollar efficiency ought to be regularly evaluating outside options, Pook says. "We need to think about IS not as a kingdom over which we have control but as a data processing utility. And, as the caretaker of that utility, we need to look for the most cost-effective way of delivering services."

In staffers' hands

What's particularly notable here is not so much that philosophy but that it has been communicated to and is carried out by teams of IS staff members who are given responsibility for improving the cost-effectiveness of particular processes. Sometimes these teams recommend outsourcing; sometimes they find other ways of gaining efficiencies — reassessing vendor contracts and vendor relationships, for example.

The process orientation is key, according to Pook, because it gives an entirely different view of the way things are accomplished from what can be achieved with conventional function-based thinking. Similar efforts throughout Engelhard are expected to yield between $60 million and $80 million during the next three years.

Not all *Premier 100* IS departments faced

with tight budgets go through the kind of extensive internal reorientation that Engelhard has gone through. Many, however, are looking hard at data centers as an area of overinvestment. Several have shut down satellite data centers, reducing real estate, hardware and personnel costs by concentrating their processing in large-scale — and often heavily automated — central sites.

45%
face budget pressures.

One facility the goal

Dallas-based JC Penney Co. closed four data centers in 1989 and will close another three this year to operate one central "lights out" facility by the end of the year. As of July 1, scheduling and change control functions had been shifted to the central facility; monitoring and operations functions were slated to move over Aug. 1.

"So far, this has all been transparent to our store and catalog operations," says Jim Blanton, manager on the consolidation project.

Walt Tempe, manager of financial information services at Unocal Corp.'s Sugar Land, Texas, office, uses the same adjective to describe the shift of his processing from a local mainframe-equipped data center to a remote supercomputer site in La Brea, Calif. The changeover has been absolutely transparent, he says. "Our response time is just like we were still sitting next to the mainframe."

Thanks to an overall decline in the price of high-speed T1 links, this $10 billion Los Angeles-based petroleum and geothermal energy company has been able to close four IBM 3090-class data centers since 1986 and use multiple T1 facilities to tie all of its offices, including a computing-intensive geothermal and seismic research group in Houston, to that single, highly automated facility in California.

Slice of the pie

But outsourcing and data center closings are only part of the picture. IS managers who are under pressure to do more with less are also rethinking old truisms about how to invest in equipment.

"One of our biggest headset changes is to view technology as a commodity and consider what is cheapest and best, rather than just buying from IBM," says Robert M. Menar, senior vice president of information services at Los Angeles-based Carter Hawley Hale Stores, Inc. A stint in Chapter 11 bankruptcy that ended in 1992 has given the retail chain a hard-nosed attitude about spending.

Between 1991 and 1992, Menar says, Carter

Unocal's Paul Jones saved millions by consolidating telecommunications service

PHOTOGRAPHY BY ALAN LEVENSON

Hawley pocketed almost $7 million by swapping out 150 million instructions per second of IBM processing power and leasing used computer equipment from a third-party provider. The used equipment, he says, got the job done just as well as the IBM gear for which the company had been paying top dollar.

Like Carter Hawley, JC Penney also takes a commodity approach to acquiring information technology. Now all systems and software buys, including those that once went automatically to IBM, are put out to bid.

"What it amounts to is that we're buying better than we ever did," says Dave Evans, IS vice president at the $19 billion retail and catalog giant. Evans says savings typically range from 20% to 40%, depending on the type of equipment involved.

Buyer beware

"Try before you buy" are Evans' words of caution for other managers interested in following a similar course. "Generally, we set ourselves up five or six months ahead of time to test the equipment we're interested in buying," he says.

Despite the retailer's aggressive cost-cutting, "we don't feel we've made any sacrifices," Evans says. "Instead, we feel we've become significantly more efficient in the way we deliver computing services."

Today, for example, nearly all of the retailer's 3,000 suppliers conduct business with the company electronically, with 93% of purchase orders and 75% of invoices processed via electronic data interchange.

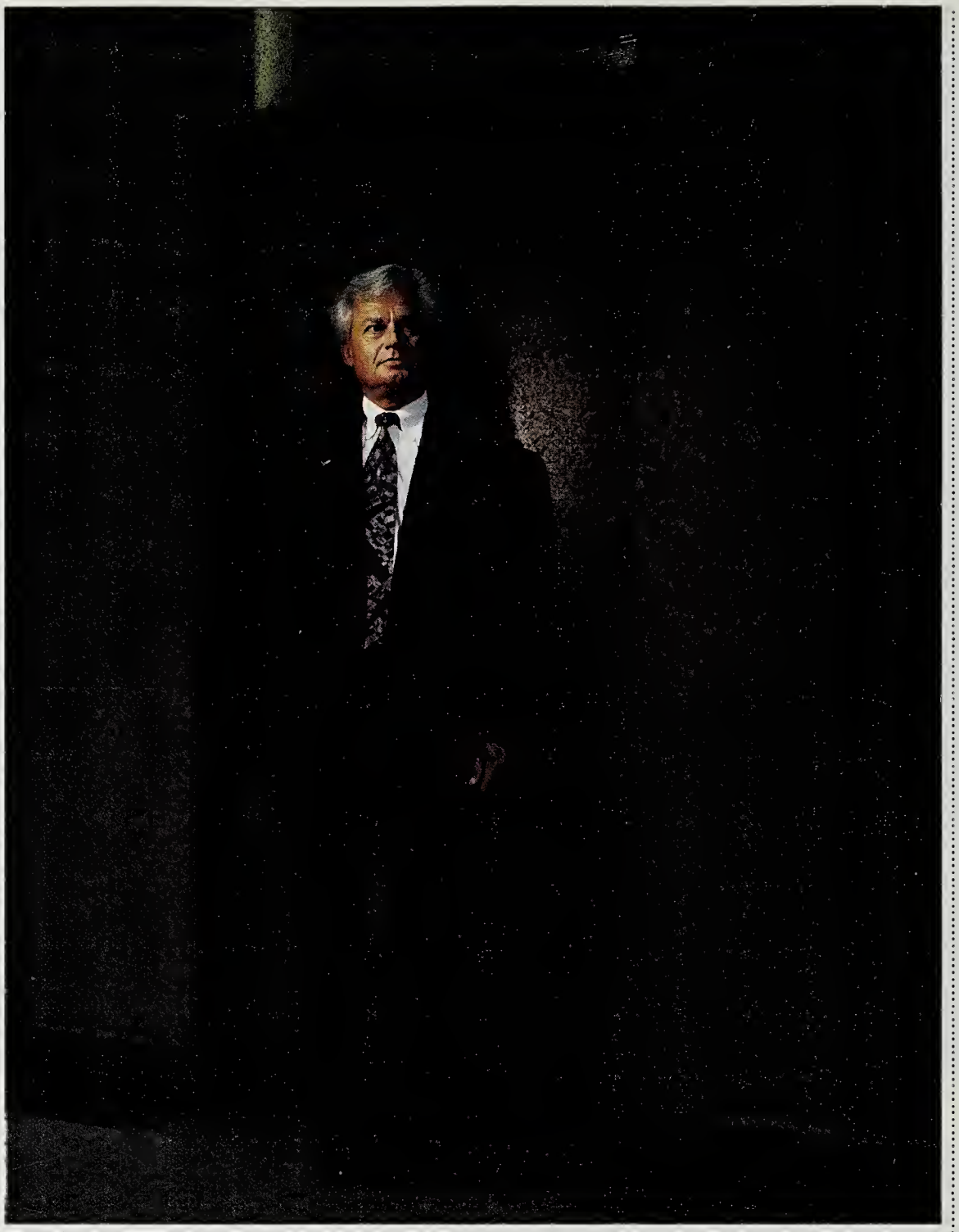
Switching gears

At Unocal, where the IS budget decreased by 20% in 1993, the quest for purchasing efficiency has led the company in a different direction. Instead of working with a greater number of suppliers, Unocal is actually consolidating its contracts and seeking volume discounts.

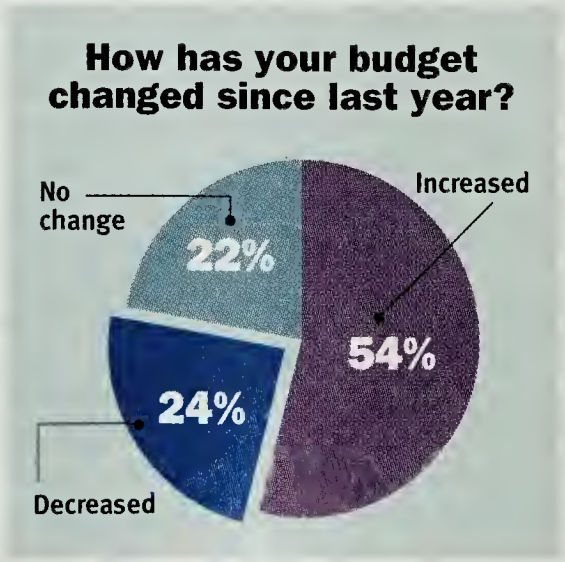
By throwing all of its voice and data network transmission business to MCI Communications Corp., for example, the company has cut communications and computing costs by "several million" dollars, according to IS director Paul Jones.

Previously, the company divided its telecommunications purchases among the Top 3 carriers.

Other cost-cutting measures at Unocal include buying PCs and terminals outright, instead of leasing, to eliminate recurring costs; relieving the 400-person IS department of PC purchasing and installation functions, turning these back over to the company's central purchasing department; and "basically, listening to users and not doing what they don't want," Jones says. "A lot of times, we would print out a 3½-in. document, and all that the user needed was two numbers."



Engelhard's Stephen Pook regularly compares internal operations against outside providers to identify possible efficiencies



Economies don't always have to come in the form of large, sweeping changes. At Engelhard, a decision made a few years ago to forego an expensive, discretionary upgrade of the company's IBM mainframes has saved several million dollars and cost nothing in terms of efficiency, according to Pook.

And Jones notes that a lot of the cost-cutting ideas implemented at his company were in the $10,000-and-under category. "But," Jones says, "if you get a thousand $2,000 ideas, you've got $2 million in savings. It's amazing how it adds up." ■

— Julia King is a free-lance technology writer in Ridley Park, Pa.

PHOTOGRAPHY BY MAX AGUILIERA-HELLWEG

YOU HAVE A MORE THAN ADEQUATE SUPPLY OF GOOD, TALENTED PROGRAMMERS, ANALYSTS AND SUPPORT STAFFERS. TROUBLE IS, THEY'RE WIRED FOR PLATFORMS, OPERATING SYSTEMS AND WAYS OF WORKING THAT DON'T MEET YOUR CURRENT REQUIREMENTS.

BRAIN STRAIN

BY DAVID BAUM

YOU MAY NOT WANT TO HEAR THIS, but devising a technology strategy is the easy part. Where things really get tough, says Ron Sonnenburg, director of information services at Deere & Co. in Moline, Ill., is in translating vision into reality.

What makes this so hard, not only at Deere but at most places, is the need to bring staffs up to speed quickly on technologies that are often radically different from anything they've encountered before. At Deere, for example, Sonnenburg's 1,500-plus systems people are experts in Cobol and IMS, twin bastions of aging mainframe systems everywhere. He wants to move his staff toward client/server, but making that transition is a little like trying to leap onto a moving train while juggling with one hand.

"We've got to keep the old systems alive while making the transition to the new, which is changing all the time," Sonnenburg says. And as if that's not enough, he adds, they have to do it without an increase in staff.

Skill reorientation is a problem most technically ambitious companies are facing. Stuart Woodring, an analyst at Forrester Research, Inc. in Cambridge, Mass., says a good number of Fortune 100 companies are floundering at retraining their systems staffs.

ILLUSTRATION BY JOHN HERSEY

Balancing act

Lack of money is part of the problem, Woodring says, but there are other factors.

One is a reluctance to invest heavily in technical education until the current rate of change abates, he says. What if you spend a lot of money to train your whole staff in the wrong technology? Better to wait and make do than make a mistake of that magnitude.

It's a delicate balance, says Jimmy Hicks, vice president of information services at Duke Power Co. in Charlotte, N.C. "You need to constantly reassess just what the cutting edge is," he explains. "I try to see where the market is going before investing a lot of resources in a new solution. And that goes for training as well."

A gradual, test-the-waters approach can become crippling if it's too gradual, but Hicks says he believes some areas are more dangerous than others. "Object-oriented programming, for example, gets a lot of press, but all the vendors are start-up companies," he says.

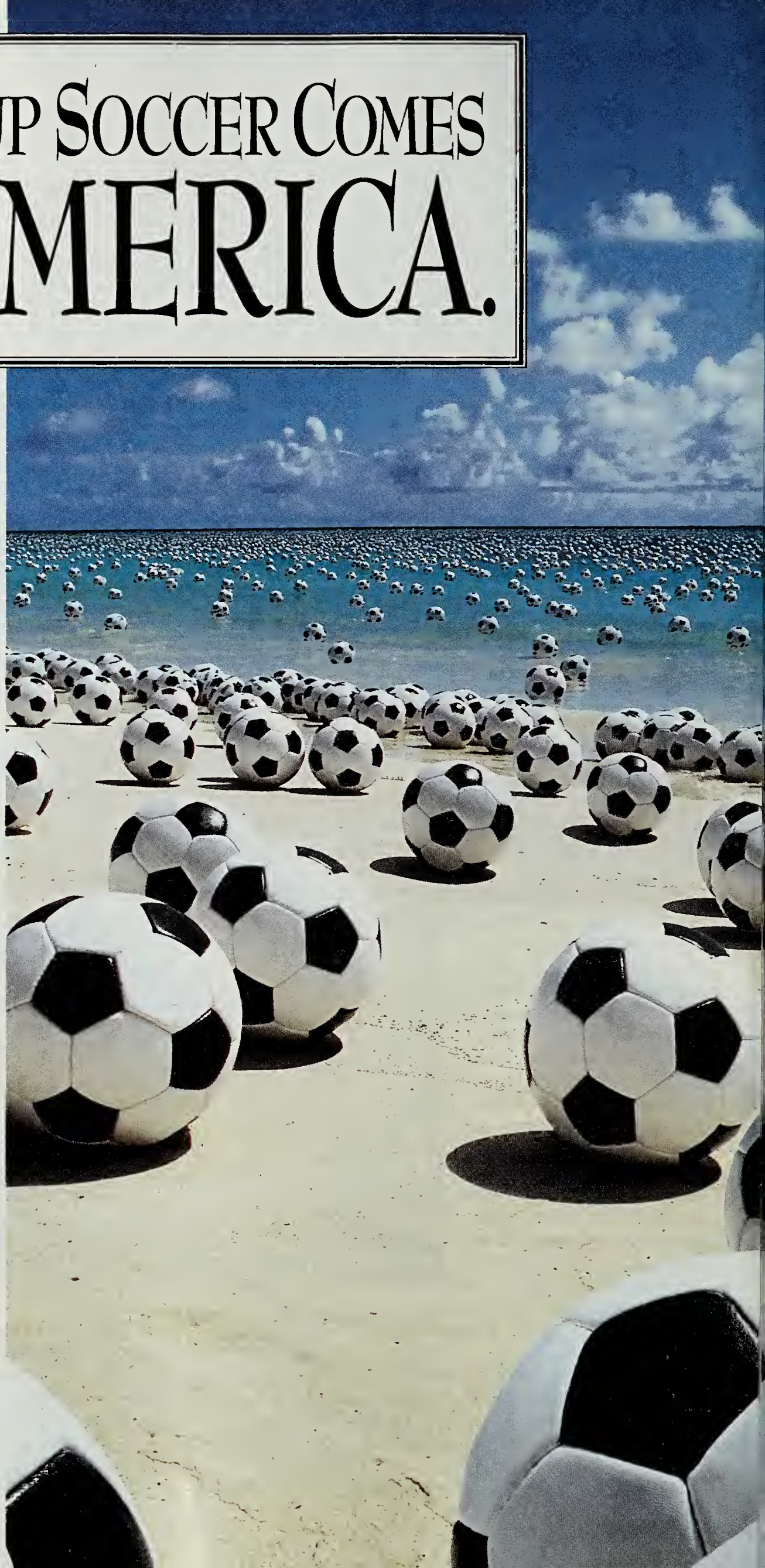
Then there is the issue Sonnenburg mentioned: the maintenance requirements of old programs, which tie up existing information systems resources and make it extremely difficult to systematically expose and educate staff to newer technologies.

But Deere hopes to escape this dilemma. The company is serious about staff education, devoting 8% of its total systems budget to training — about twice the industry average. At the Lawn and Grounds Care Division in Horicon, Wis., for example, laying a careful foundation for client/server is a

Continued on page 34

WORLD CUP SOCCER COMES TO AMERICA.

There are the little sports: The Super Bowl, The World Series, The Olympics. ◈ Then there is World Cup Soccer. ◈ An event so huge, even jaded sports fans still speak of it with wonder. ◈ Twenty-four of the best soccer teams from around the world will play fifty-two games in a four-week period, with a television audience of more than 32 *billion* people. ◈ When World Cup players meet on the field, they'll represent the pinnacle of achievement in a sport that last year alone saw more than 150 million *registered* athletes compete in 147 nations. ◈ Indeed, The World Cup is the single-



biggest sporting event in the world, based on a sport so ancient, it is almost woven into the genes of mankind itself. ◈ Before there was a Roman Empire, there was soccer. Before there was Michelangelo, there was soccer. Before the Mona Lisa smiled, soccer balls were being kicked throughout China, parts of Africa, and much of Europe. ◈ Now, as championship play in the World Cup soccer games kicks off next June, World Cup Soccer will reach America's shores for the very first time. ◈ Nine U.S. cities will host the final games: Boston, New York, Washington, D.C., Orlando, Chicago, Detroit, Dallas, Los Angeles, and San Francisco. With three and a half million tickets sold. And twenty-seven thousand volunteers. ◈ Behind it all, running the whole thing,

will be one special kind of computer. ◈ Sun™ ◈ More than a thousand Sun workstations will be linked with fifteen Sun servers housed in three separate headquarters. Every mission-critical application will be run on Sun: Event management, office management, and database management. ◈ A global press corps numbering 10,000 to 15,000 will be photographed, credentialed, and registered in a database available to any World Cup official on the network, anywhere in the world. ◈ Press centers in soccer stadiums across the U.S. will be using Sun computers to access simultaneously the World Cup information systems. ◈ World Cup staff will be able to create, file, and transmit documents using either DOS or UNIX computer applications, reducing the need for computer retraining. ◈

And all this will take place across a network that brings video, text, and data to everyone's desktop. ◈ When the World Cup championships land in America in June 1994, more people will be watching than watched the landing on the moon. ◈ And a few eyes may also be on the computer that was judged simple to use, yet powerful enough to run the world's largest sporting event. ◈ More than 135,000 organizations are using Sun systems, powered by the SPARC® chip and the Solaris® operating environment, to gain a competitive advantage. The World Cup is just one. To learn how you can benefit, call 1-800-426-5321, ext. 605.

Sun

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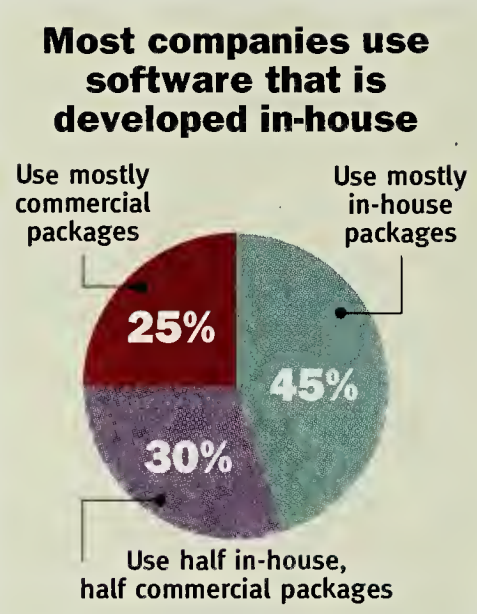
Exclusive Computer Supplier
To The 1994 World Cup

Continued from page 29
top priority. The division has appointed a small task force to establish standards and spearhead training efforts.

Dana Toraason, a member of the task force group, says the challenge isn't just acquainting systems personnel with the ins and outs of new tools but actually getting them to change the way they think. Otherwise, she says, "We'll build applications that still look like mainframe applications."

At Toraason's recommendation, classes were given in the Martin/Odell object-oriented programming methodology. The objective was learning to think in terms of modeling the enterprise rather than just one application. Once these concepts had been absorbed, other classes delved specifically into use of the Smalltalk language.

"It was like turning the world upside down," Toraason recalls. "For traditional Cobol programmers, using a language like Smalltalk is as much of an unlearning as a learning experience. Fortunately, we already have familiarity with reuse and black-boxing of Cobol subroutines, making it less of a leap as we adapt to the Smalltalk approach."



Deere has adopted a *Field of Dreams* model with the curriculum: "Build it and they will come." Team members are encouraged to follow their interests and preferences as they are exposed to new technologies.

The key here is patience. "It takes people a while to warm up to the idea of changing their whole technical environment," says Dave Kelley, manager of computer systems at Deere's Lawn and Grounds Care Division. His advice to others heading down the same road is: "Try to find a handful of champions who can share the vision with the rest of the organization and gradually broaden their horizons."

Federal Express Corp. leaves less to chance. According to Vice President and Chief Information Officer Dennis Jones, managers in the information technology group are expected to individually tailor training programs for the people who report to them. These programs are not strictly technical — basic survival skills such as project management are also part of the mix — but getting people safely and sanely through a period of major technical upheaval is clearly the overriding goal.

"Anytime you go through an enormous transition like the one facing us now — from mainframe model to client/server model — you have to cope with a lot of uncertainty and a lot of new learning requirements. Training can help you deal with both."

WHY RETRAINING MAKES SENSE

Training can be costly: The average cost of equipping a staff member for a major change in the technical environment is about half the person's salary at the outset and then $5,000 every 18 months or so. Still, many *Premier 100* companies argue that it is far better to spend money on retraining than to bring in fresh recruits. New hires might have the technology down, but they won't know your organization or your business the way your current staff does.

"Our existing people are valuable partly because of their working knowledge of the business," says Dave Kelley, manager of computer systems at the Lawn and Grounds Care Division of Deere & Co. "We've found that's more important than having someone who knows a new operating system or set of programming tools."

This is true for a lot of companies that implement client/server systems. One reason is that many of the applications being planned and built cross numerous functional areas, and this large-scale integration requires broad organizational understanding. In personnel terms, that means it is easier to teach new technical information to existing staff members than to teach technically savvy newcomers about business processes.

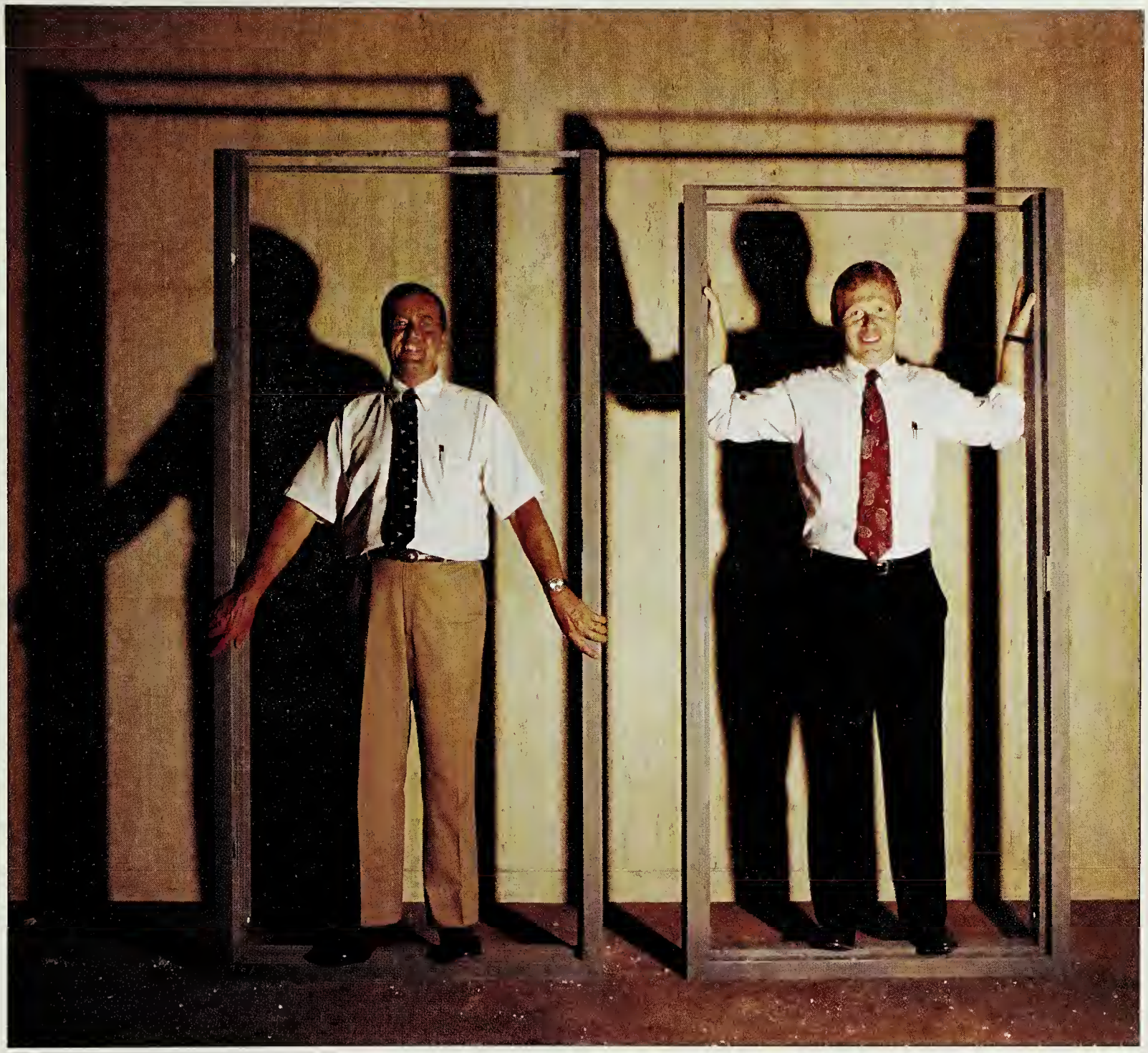
The need to link new systems with legacy applications is also a strong argument for bringing current staff up to speed, rather than restaffing. "Don't underestimate the integration required during the transition as you connect new systems with old," says Dana Toraason, a member of a Deere task force to establish standards.

Knowledge gap

At Textron, Inc. in Providence, R.I., an internally developed standards and procedures document is used to bridge the gap between the general knowledge dispensed in training and the activities programmers must relearn as they move from developing with mainframe Cobol to Micro Focus, Inc.'s Cobol Workbench.

Formal training in OS/2 and Micro Focus Cobol can't do much more than scratch the surface, says Bob Edgar, manager of corporate business systems at Textron. "Even after you have had the OS/2 training, you probably only know a fraction of what OS/2 can do," he says. "The biggest challenges come with the shift to a multitasking environment, since it involves relearning how programmers work."

That's where the standards and procedures document and Bill Totten come in. Totten, a senior analyst on Edgar's team, is essentially codifying lessons learned during pilots of application development in the new environment. Still in preparation, the final document



Textron's Bob Edgar (left) and Bill Totten are using lessons learned on pilot testing to break out of old frameworks

will include tips on projeet management, PC file maintenanee and management, testing procedures, platform-to-platform integration and a host of intangibles he has uncovered during pilot programs.

"This doeument is geared specifically toward developing mainframe applieations within a LAN environment," Totten says. "It's an evolving doeument tailored to our business, our systems, our architeeture. Even the best plans for automation won't work the way you think they will unless you have proeedures in place for how they pertain to your specific needs and work environment."

"Once you have a development workstation on your desk, you have your own proeessing environment," he adds. "The ability to check, edit, compile and animate eode in one process ean streamline the testing. But it is an entirely different approach and takes some getting used to."

Who does your application development?
28% Contractors
72% Internal staff

Takes times

Users also need time and assistance in getting used to the new styles of applications being produeed and learning how to exploit new aeeess tools.

At Harley-Davidson, Inc., MIS direetor Rieh Kolbe says an important part of making that happen is a new training faeility staffed with a former English teacher/computer salesperson and equipped with network-attaehed PCs that also conneet to the company's Application System/400s.

End users eome for instruction and to eritique applications in process. IS personnel learn not only about new teehnologies but also about softer skills sueh as eollaboration.

At Wal-Mart Stores, Ine., the education in user requirements is even more experiential. Programmers learn new skills through eross-pollination — working on projects that eross funetional areas and technologies — and by regularly working stints in stores or distribution eenters. ■

— David Baum is a Santa Barbara, Calif., free-lance technology writer.

PHOTOGRAPHY BY BRIAN SMALE

T·E·A·M PICTURES

No doubt about it, teamwork works. Here are just a few of the business/IS combinations that are scoring big at *Premier 100* companies:

The Boeing Co.

Jim Eaton (right) and Steve Henrikson set up an office in a Boeing warehouse in Seattle to build a client/server publishing system for training documentation. There, Eaton, system manager at the Commercial Airplanes Group (on the user environment side), and Henrikson, systems project manager at the Computer Services Group, have been managing a team to replace an old mainframe-based system with a client/server-based system. The new system makes training information more accessible to pilots and customers. "We wouldn't have been able to do this if we weren't located in the same place. It's helped us learn a lot more about what each person is doing, and build a better relationship," Henrikson says.

Outboard Marine Corp.

When Jack Feurig returned Dennis Ervin's call at 2 a.m. during the launch of their new networking system, Ervin realized that IS isn't the only organization with high demands and tight schedules at this $1 billion marine engine and boat manufacturer. For seven months, Feurig, director of market development and sales administration (front), worked closely with project managers Ervin (left) and Rich McCarthy (top center) to develop the PC-based Outboard Marine Network Integration system. The internal network gives sales and distribution staffs across the country direct access to information on product availability and allows outside dealers and sales staff to communicate electronically. "We still aren't programmers," Feurig says, "but we have a much greater understanding of what a system really is and how we can look at it as a tool rather than a restriction." Also pictured (right) is Harry Adams, director of systems and data processors.

PHOTOGRAPHY (ABOVE) BY MICHAEL ABRAMSON

American President Cos.

When Peter Weiss placed his first call to Terry Fitzpatrick, the tariff-tracking process at this container and cargo transportation company was a piecemeal nightmare of drifting invoice data. The many conference calls between Oakland, Calif.-based Weiss, senior manager of international systems (above) and Jersey City, N.J.-based Fitzpatrick, manager of finance and administration, paid off for this team, resulting in a standardized DB2 IEF system to automate tariff data records and invoices nationwide. "We built up a lot of open communication and trust, which helped us gain a better understanding of their business problems," Weiss says. "We had a lot of technical hurdles to jump, and we wouldn't have been able to do so without the communication and trust we had."

MCI Communications Corp.

Two years ago, Dan O'Connor and other members of business services realized they could dramatically improve sales force success if branch office personnel had easy access to information such as invoices and customer profiles. O'Connor (right) attempted to do this in the traditional way, with a lot of requests and paper forms passed back and forth to information systems. But when he finally teamed up with Joe Zuccari (left), director of systems engineering of the market segment, the time it took to deploy a branch automation system was suddenly cut in half. With a staff of about 40 people, the team designed Branchworks, which allowed branch sales and service people to access information in a matter of minutes instead of a few weeks. Zuccari says, "I have a much better understanding of our business and how our business process works, which allows me to better suit their needs. As a team, we can implement things much more quickly. Now my piloting and proving of concept cycle time goes way down because I understand the business more."

Kellwood Co.

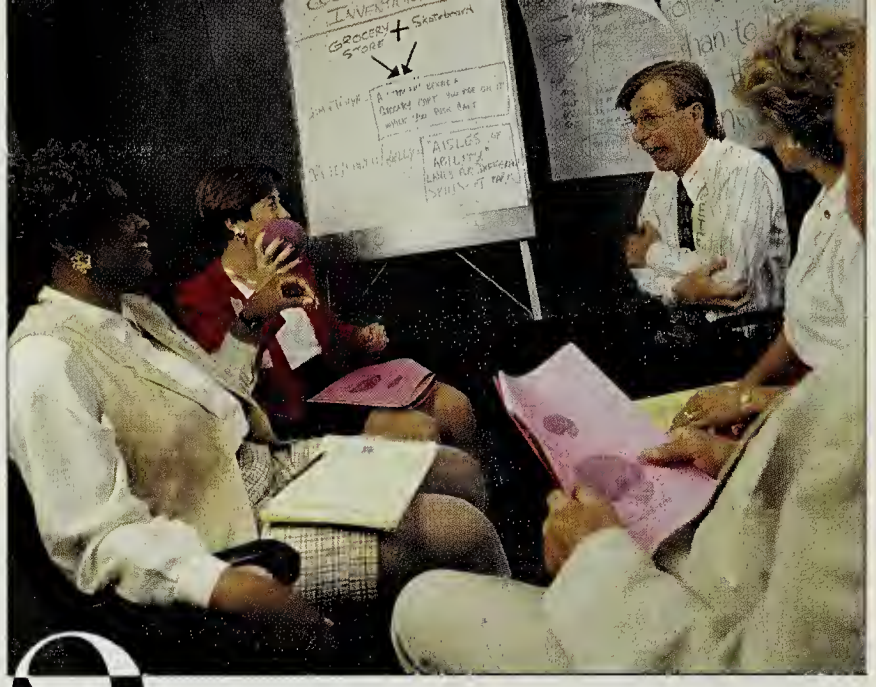
Consultants Ed Nelson and Sam Craig were well-acquainted with manufacturing requirements at Kellwood, a clothing and furnishings maker. But when the firm bought Decorp, a women's specialty dress house, in October 1990, its IS staff had to tailor Kellwood's manufacturing resource planning and payroll system to a different retail world. "Kellwood has traditionally been in business with department and chain stores," says Nelson (left), explaining why he and Craig (right) needed the expertise of Decorp's director of finance, Terry Davis, to do the job right. "With specialty stores, the number of dollars and invoices is smaller, and analysis and forecasts are different."

PHOTOGRAPHY (CLOCKWISE) BY TOM ZIMBEROFF, ANN STATES AND REID HORN

DO TRY THIS AT HOME

BY ERIN CALLAWAY

Safety-tested at Premier 100 *companies, these innovative tactics could work for you, too*



1 Data Esperanto

From its earliest use of electronic data interchange (EDI) in the 1980s, the information systems organization at Pet, Inc., a producer of prepared food and confections, decided all new internal systems would "talk EDI." Making adherence to EDI standards part of the requirements for all applications and building those standards into computer-aided software engineering tools and data modeling methods has eliminated the labor of after-the-fact translation of internally created documents into formats usable by external customers. The result: speedy communication.

2 Leaders-in-training

At The Travelers, to create IS leaders who understand the business structure, the company has constructed a management development program. The Accelerated Development Program for Tomorrow's IS Leaders, or Accent, selects high-potential new employees, including recent college graduates with computer science degrees, and rotates them through three IS positions and one nontechnical business position as part of their management training. Accent has produced many IS staff members who appreciate business needs, but the surprise benefit has been the number of trainees — 34% of the current graduates — who have chosen to stick with the business side upon completion.

3 Creative wire-heads

End users at Roadway Services, Inc. used to complain that, before they could even finish explaining their needs, staff members at Summit Information Systems, would offer an automation solution. Jerry Long, vice president of the IS operation, decided to break through this "wire-head way of solving problems" by arranging a workshop on creativity and interpersonal skills. Exercises included one that gave participants two unrelated items such as low-income housing and air transportation and asked them to develop the combination into a marketable product or service. The point was to teach IS staff members about teamwork, unconventional thinking and the importance of recognizing that "not every problem has a 100% solution."

4 Joined at the wallet

At Roadway Services, IS service levels aren't just the concern of the IS subsidiary, Summit Information Systems. Availability of on-line systems and on-time delivery of applications by IS are factored into corporate calculations of profit-sharing for all employees, right along with more traditional measures of business performance. Monetary interconnectedness seems to work. The number of on-line systems failures dropped from 365 in 1991 to only 120 in 1992.

5 Support your local IS

Rubbermaid Commercial Products, the Winchester, Va., division of Rubbermaid, Inc., recently invited IS managers at area businesses to attend the charter meeting of a noncompetitive coalition for shared information resources. Twenty-five people representing 18 companies attended to discuss goals. At the top of the agenda, according to Gary Senese, vice president of IS at Rubbermaid Commercial, was a discussion of cost-effective training methods, including an idea to have members with expertise in particular software — "power users" — train their coalition colleagues. The idea, Senese says, is to make the kind of casual skill-sharing that often occurs within firms an accessible community resource.

PHOTOGRAPHY BY JACK VAN ANTWERP

6 No more pass/fail

At Mellon Bank Corp., internal customers don't just evaluate IS services — they grade them. At the end of next quarter, Mellon's IS group will receive letter grades from each business unit for its overall quarterly performance and for each project it completes. The technology "report card" will allow Mellon IS to set tailored project goals based on the needs of individual units and then benchmark precisely those areas needing improvement. In addition, Mellon IS will use a generic card to grade the services it provides to all its customers.

7 Electronic prodding

Customers receive fast action on complaints these days at industrial and agricultural chemical producer Rohm & Haas Co., thanks to a worldwide complaint handling system that is tied into the order-entry system. The system automatically sends entered complaints through electronic-mail to an assigned "owner" and follow-up person and begins clocking the time for the problem to be resolved. If some action is not taken in a specified time, the system sends reminders to both people and continues to do so until the problem has been handled.

8 Idea drive

At Broan Manufacturing Co., a subsidiary of Nortek, Inc. and manufacturer of large home appliances, IS staff members are encouraged to participate in a companywide Fresh Idea Program, which is an incentive plan that invites company employees to present their ideas to a review committee of rotating representatives from each user department.

The committee accepts ideas based on several criteria such as safety and convenience, but bottom-line company savings is the key. Ron Yogerst, operations analyst at Broan, called the committee's attention recently to a wasteful five-page shipping form. This process led the company to develop a streamlined order-entry system that will save Broan nearly $8,000 annually. Yogerst's idea contributed to a total 1992 IS savings of $20,000.

9 Camp Depot

The IS staff at The Home Depot, Inc. is one group who knows about challenges and the importance of working together. For three years, IS staff members have participated in special Outward Bound programs that are held in the nearby mountains of North Carolina. Their most recent trip was to Franklin, N.C. This trip consisted of rock climbing, hiking, white water rafting and, of course, IS problem-solving. Besides learning how to survive in the wilderness, IS personnel learn to communicate efficiently and respect one another's strengths.

Working toward the common good is an idea that the organization puts into action in other ways as well. Each Christmas season, more than 80% of the IS staff volunteers for weekend retail shifts at Home Depot stores. But that's not all they do: This summer, the entire IS department has been spending their Saturdays building low-income housing with Habitat for Humanity.

10 'Isn't that your bolt?'

At Northrop Corp., a manufacturing shop floor system not only clears away paper clutter but also creates an easy-to-follow trail for every plane that is built. The system provides mechanics with on-line work instructions and records job progress and inspection check-offs. Used through the entire manufacturing process from instruction to inspection, the system makes it possible to trace problems back to a specific stage in manufacturing and to specific individuals who worked on the project. As a result of this system, production times have been reduced. The system times production as well, thus reducing the number of hours for each job. It also allows mechanics to identify which parts they installed. ■

PHOTOGRAPHY (LEFT) BY JAMES SCHNEPF

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A Fortune 500 company?

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Whatever happened to . . .

BY MICHAEL SULLIVAN-TRAINOR

The *Premier 100* ranking traces changes in the business and information systems activities of the largest public companies in the U.S. While each year our annual list highlights companies making an impact with technology in their businesses, it also indicates which companies have had business reversals or IS turmoil that knocked them out of the spotlight. The following companies have had such difficulties.

Aetna Life & Casualty Co. Ranked in the Top 5 in 1991, Aetna experienced an 89% decline in profit in 1992, partly because of trouble with real estate loans. The company reorganized its commercial and personal insurance and business services divisions into independent units. Parallel efforts were made to reduce and tighten the IS group. IS budget and staff were reduced significantly in 1992 and 1993.

Amoco Corp. After reaching a high of more than $2 billion in net income in 1988, Amoco profits have declined each year. The company reported a $74 million loss in 1992, along with a 12% reduction in employee head count.

Dow Chemical Co. Steady IS investments focusing on global communications projects failed to keep the company from dropping in the ranking in the face of profit problems. A $489 million loss in 1992 followed a 1991 reduction.

Eastman Kodak Co. While the jury is still out on outsourcing, Kodak has experienced significant ups and downs in its business causing its ranking to change as well.

Eli Lilly and Co. After making the ranking cut in 1991, Lilly was outdistanced by other strong-performing IS organizations. In acquisition mode in 1992, the company posted a 46% decline in profits.

Lockheed Corp. Now is a bad time for a company to have 70% of its business tied up in the defense industry. Lockheed is in the middle of a post-Cold War conversion to nondefense businesses. A $283 million 1992 loss reflects the urgency of this transition, which has also caused significant expense reductions.

Security Pacific Corp. Acquired in 1991 by BankAmerica Corp., Security Pacific's Automation Co. was one of the industry's strongest IS organizations. Since then, Bank America has been gradually merging with Security Pacific's operations.

Sears, Roebuck and Co. A consistent *Premier 100* winner, Sears dropped out of the Top 10 for the first time in 1993 due to continued struggles capped by a $3.9 billion loss in 1992. Its IS organization is moving to a more responsive service organization.

The Timken Co. Declining profit and flat revenue overshadowed a strong IS effort in factory automation, which brought Timken to prominence in the *Premier 100*. The company reported $4 million in profit on $1.6 billion in revenue last year. ■

Shifting rankings

Changing business circumstances have resulted in less prominence for the following former top-ranking *Premier 100* firms:

Company	Years in Top 5
Aetna Life & Casualty Co. Insurance	1991
Amoco Corp. Petroleum	1988, 1991
Dow Chemical Co. Chemical	1988, 1989, 1990, 1991
Eastman Kodak Co. Manufacturing	1988, 1991
Eli Lilly and Co. Pharmaceuticals	1990, 1991
Lockheed Corp. Aerospace	1988, 1989, 1992
Security Pacific Corp. Banking	1989, 1990
Sears Roebuck and Co. Retailing	1988, 1989, 1990, 1991, 1992
The Timken Co. Industrial	1989, 1990, 1991

ILLUSTRATION BY ROBERT NEUBECKER

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You can read a knee-high stack of computer magazines each month and still not find the depth and breadth of news and information you'll discover each week in the pages of *Computerworld*.

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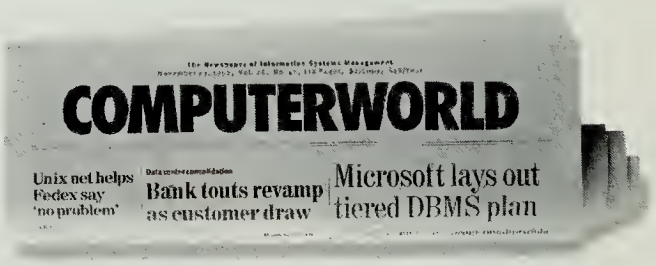

COMPUTERWORLD
Unix net helps Fedex say 'no problem'
Bank touts revamp as customer draw
Microsoft lays out tiered DBMS plan

The Newspaper of IS

HOW We Measure Effectiveness

This year's *Premier 100* combines two methods of measuring information systems' effectiveness: The amount of investment in information technology in key areas and the quality of performance the company exhibits in its business and IS initiatives.

TARGET COMPANIES

Our target group consists exclusively of large, publicly traded corporations, ranging in revenue from $300 million to more than $100 billion. Only parent companies are ranked. Thirty-three industry groups are included as listed in the Fortune Industrial and Service 500.

SOURCES OF DATA

The data for this report come from a telephone and fax survey of 600 corporations. The top IS executive at the company is used as the primary source for all information, except chief executive and peer ratings (see below). Profit and revenue figures are from public sources, as are categorizations of the company's primary line of business. Where company sources cannot provide the data, we work with analysts, internal databases and public information to develop estimates for key figures.

INVESTMENTS

We begin with a look at the IS investment, which demonstrates whether the company is committed to technology at a rate that matches or surpasses its competitors. We measure IS budget as a percentage of revenue for the corporation's entire holdings, including all subsidiaries. This figure is compared to industry average spending for that company.

The IS investment is further examined by measures of staff spending, training spending and the value of major processors as a percentage of revenue. Taken together, these figures indicate whether the company is being cost-effective in staffing, without skimping on training or on acquiring new technology. More points are awarded for higher training and value ratios and lower staff ratios.

PC NETWORKS

Another measure of a proactive technology user is the spread of PCs and terminals among all employees. More points are awarded for a higher ratio of PCs and terminals as a percentage of employees.

This year, for the first time, we have also factored in the ratio of networked PCs to total PCs and granted additional points to the more highly connected companies.

BUSINESS PERFORMANCE

Reaching beyond these measures of cost-effectiveness is a set of criteria that reveal the results of these investments.

We measure five-year profit growth to determine if the technology is paying off in business success. While technology and profitability are not tightly coupled, few IS organizations can be said to be making an effective contribution to business success if the company isn't making money.

MANAGEMENT RATING

We look at how well-positioned the IS organizations are to match the business needs.

More points are awarded to companies with IS organizations that are tightly linked to business strategic plans, investment decision-making and company view. More points are also given to those with higher investments in technology research and development, more staff dedicated to new applications and improvement activity.

EXECUTIVE AND COMPETITOR VIEWS

Peer ratings are based on the responses to a peer survey of target companies. Companies were asked to name the Top 5 most-effective users of IS in their industry groups. Companies most frequently named No. 1 received the most points.

The chief executive rating is determined by asking executives of the target companies — CEOs, chief operating officers and chief financial officers — to rate their own organizations on a five-point scale, with the lowest rating for poor performance and the highest for very good performance. The chief executive ranking was applied to the Top 200 companies only, which were determined by all the other criteria. These ratings were factored into the final ranking to determine the Top 100.

WEIGHTING MEASURES

Our weighting system counts all the measures equally except the peer rating, which receives twice the value of any other area. ■

ILLUSTRATION BY JAVIER ROMERO DESIGN GROUP, INC.

Sun salutes an IS visionary

When Wells Fargo computer programmers came to their senior manager, Roy Camblin, with a "major catastrophe," he naturally expected the worst. It had been a challenge to convince the crew to downsize from a mainframe to a UNIX®, client-server platform. The mainframe wasn't broken, they had said, so why fix it?

And now, three-fourths of the way through the migration, they were presenting him with a design bug, ample evidence of their initial concern. "How long will it take to fix?" Camblin asked apprehensively.

"A day and a half," they responded.

Camblin heaved a sigh of relief.

In the mainframe world, these types of problems could take six to nine months to fix. It could cost the project. It could cost a manager his or her job.

"It actually took closer to a week to fix the bug," Camblin recalls. But it was at that critical point in the conversion that Camblin, already a believer in UNIX and the open systems, client-server solution, became an evangelist for the cause.

The pilot project at Wells Fargo's wholesale banking division in San Francisco was initiated in December 1991. The goal was to rightsize a department known as the risk management group using Oracle® software and Sun's Solaris® operating system, running on Sun SPARCserver™ and SPARCstation™ systems.

The conversion provided all the advantages Wells Fargo had hoped for in a computing solution: lower costs, flexibility, accessibility, speed and power.

It has convinced the bank to explore converting as many applications as possible to UNIX over the next few years.

Camblin's efforts have not gone unrecognized. He was named winner of the 1992 Sun Visionary of the Year Award, the first recipient of the annual title established by Sun Microsystems, Inc.

"Roy Camblin is undoubtedly one of the most trend-setting and forward-thinking information managers out there," says Bill Raduchel, Sun's chief information officer.

"He has gone out on a limb to reengineer at Wells Fargo by forsaking the traditional MIS models and developing an innovative approach for a complex, high-risk, high-security application."

Camblin's soft-spoken demeanor belies a rather dramatic resume, which includes performing in a circus in his college days and flying T-38s as an instructor in the Air Force and helicopters in the Army Reserves.

His career in information systems has been equally impressive, rising through the ranks of discount brokerage firm Charles Schwab & Co. and Wells Fargo's credit card division before assuming the senior vice presidency of systems and operations for its wholesale division.

But all that might seem tame compared to the past year. After being awarded the Sun Visionary title a year ago, the 46-year-old has risen from relative anonymity to a key role as a proponent of open systems and UNIX, interviewed and quoted by many of the major computer trade publications. He says he doesn't mind the attention, but he is quick to share the spotlight with his supervisors and subordinates at Wells Fargo.

"I provided the senior management – the leadership. But I don't pretend to be the one who figured everything out. It was a team effort," he says.

But it was Camblin who convinced the group to look to the future.

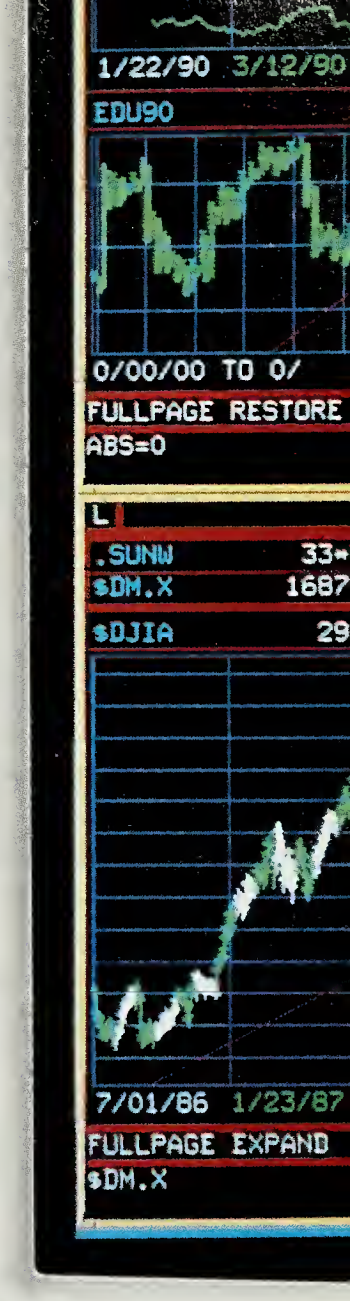
"I explained that tried-and-true methods won't get us to where we need to be three years from now," says Camblin.

"This is not just reengineering, or downsizing, or moving databases, or putting a more flexible front end on legacy systems. It's all those things and more. It's reengineering the way we do business."

As the champion of open systems and rightsizing technology, Sun Microsystems, Inc. established an annual award in 1992 to honor those who create an organization-wide, client-server solution that improves efficiency, saves money and puts technology into the hands of front-line employees.

The first award was presented to Wells Fargo senior vice president Roy Camblin, who received a $10,000 check to donate to the educational institution of his choice.

The recipient of the 1993 Sun Visionary of the Year award will be named at a ComputerWorld dinner in New York in October honoring their Premier 100 winners.



Sun

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MAKING THE C

Peer ratings:

You're doing something right when rivals respect you

While there are many ways to gauge information systems effectiveness, one of the most telling clues is how a company is viewed by its peers. Strong IS initiatives have a direct impact on competitors. Competitors are also well aware of weaknesses that they can exploit with their own IS efforts.

Since 1991, we have tracked the most well-respected IS organizations through the *Premier 100*'s annual Peer Rating. Companies are asked to choose the most effective users of IS in their industry (excluding themselves).

For three consecutive years, four firms have received the highest ratings in their industries: Air Products and Chemicals, Inc., The Boeing Co., Federal Express Corp. and Wal-Mart Stores, Inc. Here's what competing firms say about them:

Air Products and Chemicals "is successfully addressing business needs and networking."

Boeing "has a breadth and depth of technology applications in engineering and manufacturing. The company effectively uses its people resources and aligns IS with company goals."

Fedex "understands the importance of technology. The company has world-class shipment tracking and customer service systems. It's a standards-setter. We're very impressed with how they add value for their customers and generate customer enthusiasm for IS."

Wal-Mart "has strong point-of-sale and replenishment systems. Their centralized buyers can talk directly to their wholesalers through computer linkups, resulting in significant deals. The company pushes the limit of business by using technology."

Out with the old . . .

This year has brought in the following new firms with high ratings:

Abbott Laboratories, cited for its business partnerships.

AMR Corp., named for "the range of applications of technology and its reservation systems."

Cigna Corp., selected for its re-

Peer review

The following companies received the highest ratings from their fellow IS executives:

- Abbott Laboratories
- Air Products and Chemicals, Inc.
- AMR Corp.
- The Boeing Co.
- Cigna Corp.
- Federal Express Corp.
- The Travelers
- US West, Inc.
- Union Pacific Corp.
- UAL Corp.
- Wal-Mart Stores, Inc.

engineering efforts.

The Travelers, dedicated to research and development in technology. It has created an impressive insurance regulation/customization system that spans all 50 states.

US West, Inc., picked because it uses large IS applications to offer a range of service options.

Union Pacific Corp., for "top management participation in IS."

Beyond the highest-rated companies are those that competitors single out because of their outstanding IS initiatives. Some of the firms and the kudos offered by industry competitors follow:

Aerospace: Martin Marietta Corp. — "The company uses IS in an integrated fashion. From product definition through manufacturing, their cross-functional integration is the most seamless of any organization."

Consumer products and services: *The New York Times* — "They've been very innovative in past years. We usually use them as a guide as we try new things."

Financial services: United Services Automobile Association — "They have strong personnel, customer handling and work procedures as well as innovative image processing in eustomer service."

Industrial and automotive products: Ford Motor Co. — "The company is faster than the competition in exploring and adopting new ways of using IS."

Manufacturing: Xerox Corp. — "Management is successfully sponsoring new systems directions."

Petroleum and chemicals: The Dow Chemical Co. — "They are effectively using technology in strategic businesses."

Pharmaceuticals, food and beverages: Johnson & Johnson — "They have been a leader in engineering simpler application interfaces for customers and distributors."

Retailing and wholesaling: JC Penney Co. — "Changes have been made in IS, making the company more competitive by getting goods to the stores more efficiently."

Transportation: Airborne Freight Corp. — "High-quality applications combined with automation makes them extremely competitive."

Utilities: SCECorp — "The company uses technology and telecommunications effectively to support corporate strategies. It has capable management and a good IS infrastructure."

RADE

Executive ratings: *The ingredients of outstanding management*

To be truly effective, an IS group has to be more than efficient. It must contribute significantly to business success, and that won't happen without excellent management. Such management involves organizational structure, alignment of IS goals with business goals, management support and the deployment of resources to match objectives, among others.

In this year's *Premier 100* methodology, we introduce a set of categories that indicate effective IS management. Consultants Richard H. Nahmias at Nahmias & Co., Michael Ashmore at CSC Index, Inc. and Howard Rubin at Howard Rubin Associates contributed to the development of these criteria:

- **Structure:** How your IS organizational structure complements your company structure.
- **Strategic alignment:** How closely your strategic IS plan is linked to your strategic business plan.
- **Reporting level:** Who your top IS executive reports to.
- **Technology perception:** How senior management views technology.
- **User feedback:** Whether or how often you conduct user satisfaction surveys.
- **Investment methods:** How you determine where to make technology investments.
- **Focus of activities:** Where you focus the majority of your IS efforts.
  - Renovating the IS structure.
  - Automating.
  - Strategic value.
  - Re-engineering.
- **Application quality:** Technical and business quality of applications that support business lines and whether you will rewrite them.
- **User spending:** How much IS spending falls outside the IS group.
- **IS research:** Percentage of IS budget devoted to R&D.
- **Staff deployment:** Percentage of staff devoted to maintenance vs. application development.

One effectively managed company according to the criteria is Deere & Co., which achieved high ratings in a number of categories. Deere's IS organization is a hybrid structure. IS strategic plans are crafted separately from business plans but are linked to business strategies.

Management views the effective application of technology as the key to the company's success. Formal cost/benefit analysis using traditional measures is used to determine where to make investments.

The majority of IS activities are at the two extremes of IS efforts: renovating IS structure and re-engineering. Ten percent of the IS budget is devoted to renovation, 20% to automation, 60% to strategic value applications and 10% to re-engineering.

The business quality of applications is high across the board, with medium to high technical quality.

Two percent of Deere's IS budget goes to R&D. Sixty percent of the staffing budget is dedicated to maintenance and 40% to application development.

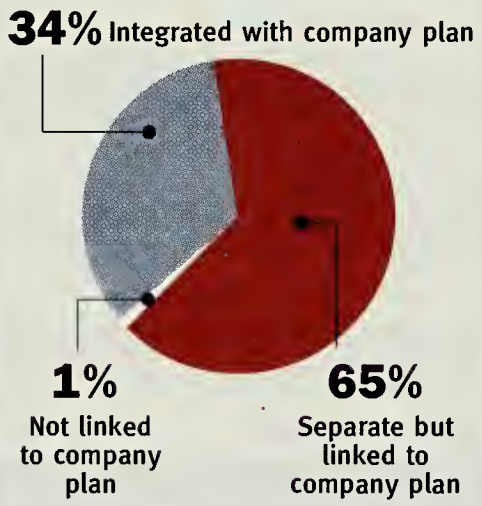
Unocal Corp. is another example of effective management. Its hybrid structure is matched by a hybrid IS organization. Strategic plans are separate but linked.

Traditional cost/benefit analysis is used to determine where to invest in IS, and annual user satisfaction surveys are conducted. The company is renovating its IS structure and dedicating 50% of its budget to the effort.

Application rewrites are under way. Staffing is divided 50/50 between maintenance and development expenditures. ■

Strategic planning

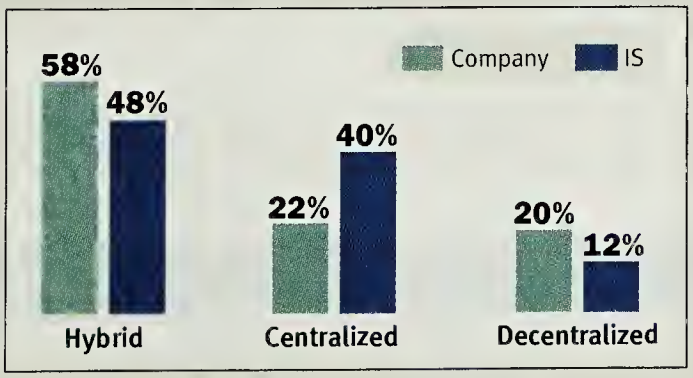
Only one-third of *Premier 100* companies do their IS planning as part of business plans



How do you match up?

Premier 100 IS organizations have the following management views and policies:

ORGANIZATION STRUCTURE



ACTIVITY EMPHASIS*

Great deal of effort focused on projects that involve . . .

Strategic value	88%
Re-engineering	73%
Renovating IS structure	64%
Automating (replacing manual labor with technology)	21%

*Multiple responses allowed

MANAGEMENT'S TECHNOLOGY ATTITUDE

"Effective application of technology is key to success" — 82%

"Our business is technology-driven" — 8%

"Technology plays a supporting role" — 8%

Other — 2%

The PREMIER 100

1993 Industry rank	Company	Total score	Peer points	Chief executive points	Management points	IS budget (millions)
AEROSPACE						
1	The Boeing Co.	73,485	17,490	6,000	8,580	$1,509
2	Martin Marietta Corp.*	73,070	16,000	8,250	8,000	$301
3	Northrop Corp.	72,880	16,000	8,250	8,595	$222
4	Allied Signal, Inc.*	69,535	17,280	6,000	8,000	$345
5	Grumman Corp.	69,500	16,000	8,250	8,670	$146
6	Gencorp, Inc.*	67,845	16,000	7,500	8,000	$39
7	Textron, Inc.	67,755	16,000	6,000	8,640	$193
8	McDonnell Douglas Corp.*	67,285	16,000	7,500	8,000	$683
9	General Dynamics Corp.*	67,090	16,000	8,250	8,000	$350
10	Raytheon Co.*	63,980	16,000	6,000	8,000	$105
	Industry average	69,243	16,277	7,200	8,249	$389.3
CONSUMER PRODUCTS AND SERVICES						
1	Dibrell Brothers, Inc.*	77,170	16,000	8,250	8,000	$7.1
2	Hon Industries, Inc.*	76,470	16,000	9,000	8,000	$8.9
3	The Dun & Bradstreet Corp.*	74,335	16,000	6,000	8,000	$776.3
4	Helene Curtis Industries, Inc.	73,700	16,000	8,250	8,580	$25.6
5	Marriott Corp.*	73,650	16,000	6,000	8,000	$160
6	Reader's Digest Association, Inc.	73,315	16,000	6,000	8,000	$120
7	Kellwood Co.	73,015	16,000	8,250	8,000	$13.8
8	Browning-Ferris Industries, Inc.*	72,215	16,000	6,000	8,000	$20.7
9	International Flavors and Fragrances, Inc.*	71,820	16,000	6,000	8,000	$9.1
10	Emerson Electric Co.*	71,680	16,000	6,000	8,000	$71
	Industry average	73,737	16,000	6,975	8,058	$121.3
FINANCIAL SERVICES						
1	Banc One Corp.	79795	16,000	9,000	8,655	$387
2	Mellon Bank Corp.	78345	16,000	9,000	8,745	$135
3	Prudential Insurance Co.*	76470	16,000	6,000	8,000	$367.8
4	Chemical Banking Corp.*	71750	16,000	6,000	8,000	$625
5	The Travelers*	71435	17,550	9,000	8,000	$387.2

Listings continue on the following page

*Estimates are from *Computerworld* sources and not the companies

IS budget as % of revenue	% of IS budget for staff	% of IS budget for training	Processor market value (millions)	Processor market value as % of revenue	Total PCs and terminals	% of employees with PCs/terminals
5%	42%	.8%	$900	3%	118,500	80%
5.1%	40%	1%	$50	.84%	30,000	54%
4%	52%	.1%	$8	1.4%	22,000	65%
2.9%	40%	3%	$60	.5%	36,000	40%
4.2%	48%	4%	$75	2.1%	18,000	85%
2%	39.9%	1.4%	$5.5	2.8%	8,700	63%
2.3%	40%	5%	$75	8.9%	30,000	56%
3.9%	61%	5%	$137	.8%	75,000	86%
4%	53%	.8%	$113	1.3%	7,646	13%
1.2%	42.5%	3.1%	$60	.64%	34,000	53%
3.5%	45.8%	2.4%	$148.3	2.2%	37,984.6	59.5%
.7%	56.9%	2%	$16	1.4%	6,960	100%
1.3%	34%	2%	$15	2.1%	3,800	67%
16.3%	58%	2%	$150	3.1%	50,000	86%
2.5%	38.5%	1.5%	$8	.8%	3,720	120%
1.8%	42%	.8%	$20	2%	9,750	100%
4.5%	68%	5%	$29	1.5%	3,500	26%
1.5%	48%	.7%	$200	2%	11,000	78%
.6%	46%	3%	$79	2.3%	25,644	98%
.8%	42%	4%	$14	1.3%	3,469	82%
.9%	39%	4.7%	$42	.54%	52,568	75%
3.1%	47.3%	2.6%	$57.3	1.7%	17,041.1	83.2%
6.5%	27.9%	4%	$93	1.5%	42,000	100%
4.5%	48%	1%	$36	1.2%	25,000	100%
4%	42%	3%	$230	3%	81,000	80%
5.1%	63%	3%	$42	1.6%	20,000	50%
4%	50%	3%	$96.8	1%	30,000	100%

The PREMIER 100

1993 Industry rank	Company	Total score	Peer points	Chief executive points	Management points	IS budget (millions)
FINANCIAL SERVICES						
6	Bankers Trust New York Corp.	71,005	16,000	8,250	8,700	$450
7	Crestar Financial Corp.*	70,030	16,000	8,250	8,000	$73.7
8	Cigna Corp.*	69,605	17,460	6,000	8,000	$743.2
9	American Express Co.*	67,995	16,000	6,000	8,000	$1,078.4
10	Primerica Corp.	67,375	16,000	6,000	8,490	$358.8
	Industry average	72,381	16,301	7,350	8,259	$460.6
INDUSTRIAL AND AUTOMOTIVE PRODUCTS						
1	Cummins Engine Co.*	76,565	16,000	9,000	8,000	$32.1
2	Harley-Davidson, Inc.	74,160	16,000	8,250	8,715	$14.7
3	Great American Management & Investment, Inc.*	74,155	16,000	6,000	8,000	$10
4	Outboard Marine Corp.*	73,650	16,000	6,000	8,670	$19.7
5	Deere & Co.	73,060	16,000	6,000	8,685	$203
6	Caterpillar, Inc.	72,420	16,000	8,250	8,775	$383
7	Navistar International Corp.*	69,770	16,000	6,000	8,000	$76.3
8	Harnischfeger Industries, Inc.*	68,605	16,000	6,000	8,000	$28
9	Nortek, Inc.*	65,750	16,000	9,000	8,000	$89.5
10	Tecumseh Products Co.*	61,750	16,000	6,000	8,000	$13
	Industry average	70,988.5	16,000	7,050	8,285	$86.9
MANUFACTURING						
1	Rubbermaid, Inc.	78,050	16,000	8,250	8,000	$18
2	Phelps Dodge Corp.	76,725	16,000	8,250	8,730	$15.2
3	Westvaco Corp.	75,655	16,000	7,500	8,000	$31.5
4	Bandag, Inc.	75,335	16,000	6,000	8,000	$8.3
5	Raychem Corp.	74,790	16,000	8,250	8,000	$29.5
6	Cone Mills Corp.	74,335	16,000	7,500	8,000	$10.1
7	Polaroid Corp.	74,015	16,000	7,500	8,000	$66.5
8	West Point-Pepperell, Inc.	73,265	16,000	6,000	8,000	$17
9	Willamette Industries, Inc.	71,325	16,000	6,000	8,000	$18.6
10	3M Co.	71,300	16,000	6,000	8,000	$335
	Industry average	74,479.5	16,000	7,125	8,073	$55

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6.9%	49%	3%	$70	1.1%	15,000	100%
6.8%	41%	2%	$10	1%	5,300	90%
4%	50%	3%	$300	1.6%	52,000	100%
4%	40%	5%	$800	3%	115,000	100%
7%	51%	3%	$51	1%	15,500	100%
5.28%	46%	3%	$173	1.6%	40,080	92%
.9%	53.4%	.9%	$109.3	2.9%	23,000	100%
1.3%	38%	3%	$.8	1%	1,525	26%
.7%	42.7%	2%	$5	.4%	450	100%
1.8%	46%	3%	$8	.7%	8,400	100%
2.9%	49%	8%	$40	5.7%	20,500	60%
3.8%	52.1%	1.7%	$153.2	1.5%	36,000	71%
1.9%	43%	2%	$21	.5%	6,000	43%
2%	49.8%	1.7%	$25	1%	9,209	79%
1%	43%	2%	$5	.5%	2,200	41%
.9%	40%	5%	$6.5	.5%	5,000	39%
1.73%	46%	2.9%	$37.4	1.8%	11,228.4	66%
1%	46%	5%	$105.7	5.8%	35,205	100%
.6%	37%	2%	$3	3%	4,500	100%
1.4%	39%	4%	$211.4	1%	38,636	100%
1.4%	46%	4%	$36	2%	4,847	100%
2.3%	42%	3%	$11	.8%	7,107	62%
1%	41%	1.7%	$8	1%	13,825	98%
3%	28%	3%	$12	.5%	3,500	29%
1.1%	40%	5%	$45	3%	1,867	28%
.8%	36%	5%	$280	1%	39,391	100%
2.4%	55%	8%	$80	.5%	50,000	100%
1.5%	41%	4.1%	$79.2	1.9%	19,888	82%

The PREMIER 100

1993 Industry rank	Company	Total score	Peer points	Chief executive points	Management points	IS budget (millions)
PETROLEUM AND CHEMICALS						
1	Air Products and Chemicals, Inc.*	77,785	17,370	8,250	8,000	$51
2	Engelhard Corp.	76,670	16,000	8,250	8,610	$18.2
3	Oryx Energy Co.*	74,750	16,000	9,000	8,000	$26
4	Rohm & Haas Co.	74,745	16,000	8,250	8,790	$65
5	Unocal Corp.	74,325	16,000	8,250	8,700	$85
6	The B. F. Goodrich Co.*	72,690	16,000	6,000	8,000	$34
7	Vulcan Materials Co.*	72,500	16,000	6,000	8,000	$11
8	Sherwin-Williams Co.	71,870	16,000	6,000	8,580	$29.3
9	Amerada Hess Corp.*	70,725	16,000	6,000	8,000	$43
10	FMC Corp.	69,015	16,000	8,250	8,700	$100
	Industry average	73,508	16,137	7,425	8,338	$46.3
PHARMACEUTICALS, FOOD AND BEVERAGES						
1	Abbott Laboratories*	77,880	17,580	6,000	8,000	$170
2	Becton, Dickinson & Co.	75,910	16,000	8,250	8,700	$57.4
3	Hershey Foods Corp.*	74,285	16,000	7,500	8,000	$27.7
4	Kellogg Co.*	73,880	16,000	6,000	8,000	$48
5	Pet, Inc.*	73,505	16,000	8,250	8,000	$22.2
6	Hormel Foods Corp.*	72,205	16,000	6,000	8,000	$25.5
7	Merck & Co.	71,600	16,000	6,000	8,805	$200
8	Schering-Plough Corp.*	71,600	16,000	6,000	8,000	$67
9	The Quaker Oats Co.*	70,905	16,000	6,000	8,000	$71.3
10	Whitman Corp.	70,145	17,370	8,250	8,000	$11.9
	Industry average	73,192	16,295	6,825	8,151	$70.1
RETAILING AND WHOLESALING						
1	Winn-Dixie Stores, Inc.*	75,440	16,000	8,250	8,000	$98.8
2	Dillard Department Stores, Inc.*	73,415	16,000	6,000	8,000	$28.8
3	Carter Hawley Hale Stores, Inc.	72,975	16,000	6,000	8,775	$23.1
4	Albertson's, Inc.*	72,900	16,000	6,000	8,000	$101.7
5	JC Penney Co.	72,810	16,000	9,000	8,745	$176

Listings continue on the following page

*Estimates are from *Computerworld* sources and not the companies

IS budget as % of revenue	% of IS budget for staff	% of IS budget for training	Processor market value (millions)	Processor market value as % of revenue	Total PCs and terminals	% of employees with PCs/terminals
1.6%	35%	1%	$10	4.6%	14,500	100%
1.8%	61%	2%	$.3	.6%	3,500	66%
2%	40%	1%	$14	1%	769	48%
2.2%	40%	5%	$35	1.1%	8,500	43%
1%	38%	3%	$21	.23%	10,000	68%
1.3%	44%	2%	$58	2.2%	6,000	44%
1%	37%	3%	$5	.5%	6,400	100%
.67%	45%	4%	$30	1.1%	17,846	100%
.7%	46.6%	3.4%	$159	.25%	9,500	90%
2.5%	40%	3%	$43	1%	11,000	43%
1.5%	42.7%	2.7%	$37.5	1.3%	8,802	70.2%
2.2%	53%	2%	$157	2%	48,000	100%
2.4%	52%	1.5%	$20	.9%	7,100	37%
.9%	48%	3%	$10	.3%	13,700	100%
.8%	48%	4%	$60	1%	10,000	58%
1.3%	40%	3%	$34.2	2%	4,800	65%
.9%	39%	2%	$17	.6%	8,300	100%
1.6%	51%	5%	$130	1.5%	20,000	52%
1.6%	40%	.3%	$33	.8%	10,000	47%
1.3%	57%	4%	$21.1	.4%	6,500	31%
.57%	49.6%	4.5%	$23.7	1%	7,000	50%
1.4%	47.8%	2.9%	$50.6	1.05%	13,540	64%
.9%	37%	5%	$70	.7%	90,000	88%
.6%	23.6%	1%	$50	1%	17,593	52%
1.1%	45%	2%	$75	.9%	5,000	41%
1%	38%	4%	$152.6	1.5%	70,000	99%
.9%	45%	1%	$45	2.8%	90,000	47%

The PREMIER 100

1993 Industry rank	Company	Total score	Peer points	Chief executive points	Management points	IS budget (millions)
RETAILING AND WHOLESALING						
6	Wal-Mart Stores, Inc.	70,745	17,640	6,000	8,700	$335.5
7	The Limited, Inc.*	70,025	16,000	6,000	8,000	$44.3
8	Food Lion, Inc.	68,685	16,000	6,000	8,805	$28.8
9	McDonald's Corp.	67,150	16,000	6,000	8,580	$70
10	The Home Depot, Inc.	66,100	16,000	6,000	8,000	$70
	Industry average	71,025	16,164	6,525	8,361	$97.7
TRANSPORTATION						
1	Alexander & Baldwin, Inc.*	78,075	16,000	7,500	8,000	$27.9
2	AMR Corp.	77,795	17,370	9,000	8,755	$1,004
3	Yellow Corp.	77,360	16,000	9,000	8,655	$41
4	Roadway Services, Inc.	77,160	16,000	9,000	8,685	$140.7
5	American President Cos.	76,295	16,000	6,000	8,685	$68.9
6	Federal Express Corp.	75,695	16,000	9,000	8,655	$360
7	Airborne Freight Corp.	75,675	17,310	8,250	8,640	$50
8	Union Pacific Corp.	75,145	17,340	6,000	8,745	$251
9	UAL Corp.	75,125	17,310	6,000	8,000	$331.1
10	Consolidated Freightways, Inc.	73,925	16,000	6,000	8,580	$89.8
	Industry average	76,225	16,533	7,575	8,540	$236.4
UTILITIES						
1	US West, Inc.*	77,250	17,340	8,250	8,000	$400
2	Duke Power Co.	76,995	16,000	8,250	8,565	$76.6
3	Carolina Power & Light Corp.	76,950	16,000	8,250	8,655	$80.5
4	MCI Communications Corp.	76,655	16,000	6,000	8,580	$667
5	SCECorp*	75,140	16,000	6,000	8,000	$135
6	GTE Corp.	74,590	16,000	6,000	8,565	$762.8
7	Northeast Utilities	73,605	16,000	6,000	8,760	$69.4
8	Southwestern Bell Corp.*	73,385	16,000	6,000	8,000	$305
9	FPL Group, Inc.*	71,135	16,000	6,000	8,505	$71.2
10	AT&T	70,050	17,610	6,000	8,745	$3,700
	Industry average	74,576	16,295	6,675	8,438	$626.8

*Estimates are from *Computerworld* sources and not the companies

IS budget as % of revenue	% of IS budget for staff	% of IS budget for training	Processor market value (millions)	Processor market value as % of revenue	Total PCs and terminals	% of employees with PCs/terminals
.6%	35%	10%	$40	.2%	140,000	33%
.6%	37%	1%	$20	.3%	45,000	45%
.4%	20%	4%	$2	.1%	2,000	29%
1%	31%	1%	$12	.2%	4,500	25%
1%	36%	3%	$40	1%	5,000	72%
.8%	34.8%	3.2%	$50.7	.9%	38,909	53%
3.8%	36%	5%	$16	2.1%	8,700	100%
4%	39%	1%	$320	2.2%	139,570	100%
1.8%	54%	2%	$18.5	1%	4,700	100%
2.6%	38.7%	2.5%	$89.4	.7%	12,920	69%
2.8%	57%	1%	$6.3	.4%	5,223	115%
4.5%	48.8%	1%	$49.1	.6%	18,000	22%
3.4%	36%	1%	$9.2	.6%	10,600	68%
2.9%	47%	3%	$17	3%	19,857	100%
2.6%	19%	.5%	$18	.14%	2,480	76%
2.2%	53%	2%	$7	.2%	8,670	100%
3.1%	42.9%	1.9%	$55.1	1.1%	23,072	85%
3.9%	40%	5%	$50	.5%	60,000	94%
1.8%	44%	3.5%	$30.3	.7%	17,187	91%
2.9%	37%	6%	$28.5	1%	7,000	100%
6.3%	33%	4%	$400	3%	44,000	50%
1.7%	38%	3%	$56.7	.7%	11,000	64%
3.8%	21%	2%	$148	.7%	16,327	100%
2.2%	38%	5.3%	$93.3	2.9%	6,800	70%
3.1%	45%	4%	$10.5	1%	60,000	100%
1.4%	20.7%	1%	$160	3%	14,500	100%
5.7%	40%	5%	$675	1%	320,000	100%
3.3%	35.7%	3.9%	$165	1.5%	55,681.4	87%

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The 1993 Premier 100

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